

# 25 HAVEN ST.

## READING, MA

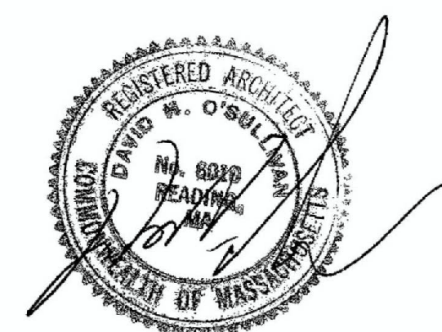


### SUBMISSION DRAWING LIST

~~REVISED: 10/24/2022~~

REVISED 2: 11/28/2022

|       |                          |
|-------|--------------------------|
| A0.01 | PROJECT DATA SHEET       |
| A0.02 | SCHEMATIC LANDSCAPE PLAN |
| A0.03 | SHADOW STUDIES           |
| A0.04 | SCHEMATIC LIGHTING PLAN  |
| A1.01 | GROUND FLOOR PLAN        |
| A1.02 | SECOND FLOOR PLAN        |
| A1.03 | THIRD FLOOR PLAN         |
| A1.04 | FOURTH FLOOR PLAN        |
| A1.05 | ROOF PLAN                |
| A3.01 | ELEVATIONS               |
| A3.02 | ELEVATIONS               |
| A3.10 | PERSPECTIVES             |
| A3.11 | PERSPECTIVES             |
| A3.12 | PERSPECTIVES             |
| A4.01 | SECTIONS                 |



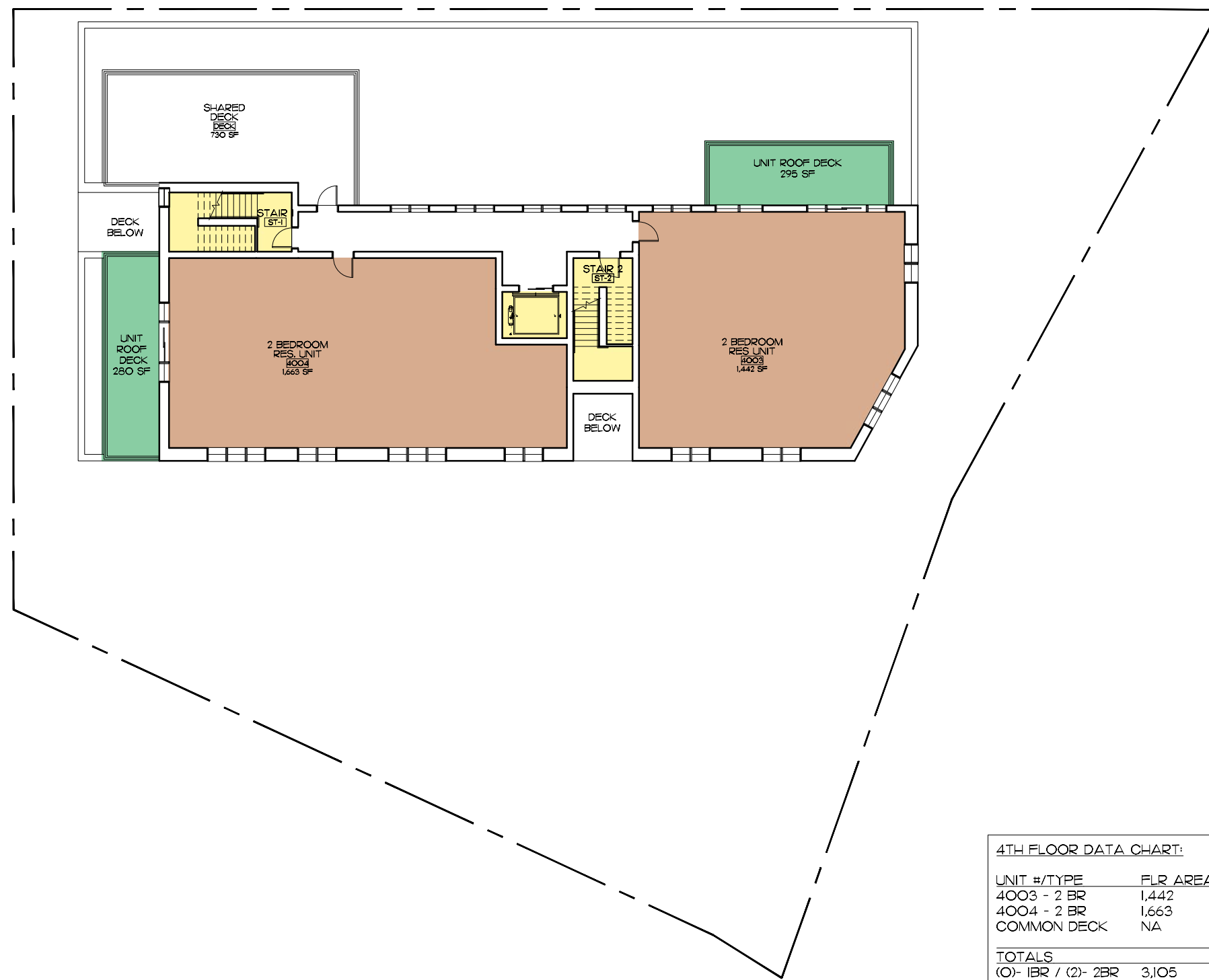
**ARCHITECT**  
O'SULLIVAN ARCHITECTS  
606 MAIN STREET, SUITE 3001  
READING, MA 01867-3009  
Voice: (781) 439-6166  
Fax: (781) 439-6170

**DEVELOPER**  
25 HAVEN STREET LLC  
611 SALEM STREET  
WAKEFIELD, MA 01880  
Voice: (781) 572-3033

**PERMITTING ATTORNEY**  
LATHAM LAW OFFICES LLC  
643 MAIN STREET  
READING, MA 01867-3009  
Voice: (781) 942-4400  
Fax: (781) 989-3239

**CIVIL ENGINEER**  
HAYES ENGINEERING  
303 SALEM STREET  
WAKEFIELD, MA 01880  
Voice: (781) 246-2800  
Fax: (781) 246-7596

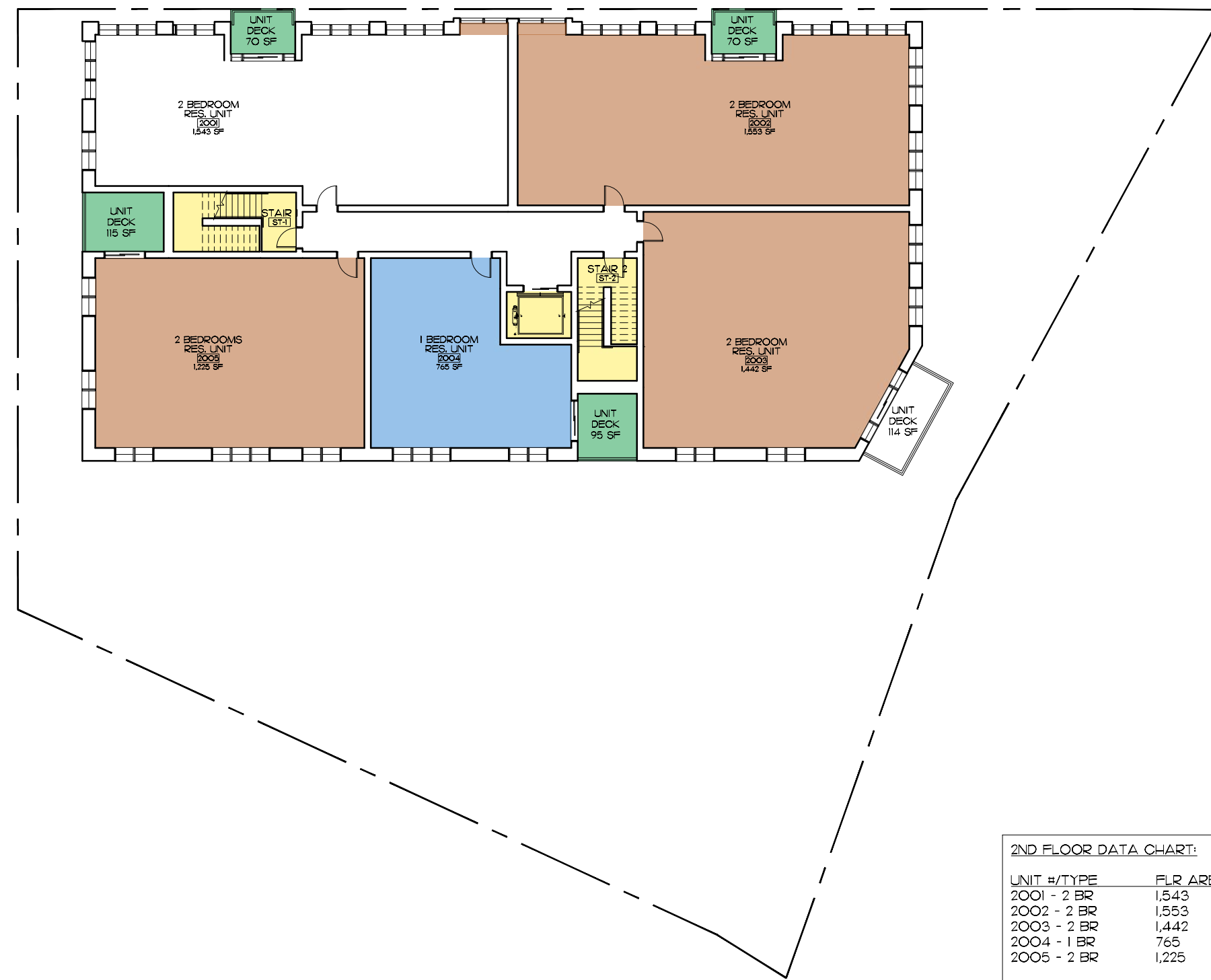




4TH FLOOR DATA CHART:

| UNIT #/TYPE       | FLR. AREA NET SF | OPEN SP. SF |
|-------------------|------------------|-------------|
| 4003 - 2 BR       | 1,442            | 295         |
| 4004 - 2 BR       | 1,663            | 290         |
| COMMON DECK       | NA               | 730         |
| <b>TOTALS</b>     |                  |             |
| 01- 1BR / 02- 2BR | 3,105            | 1,305       |

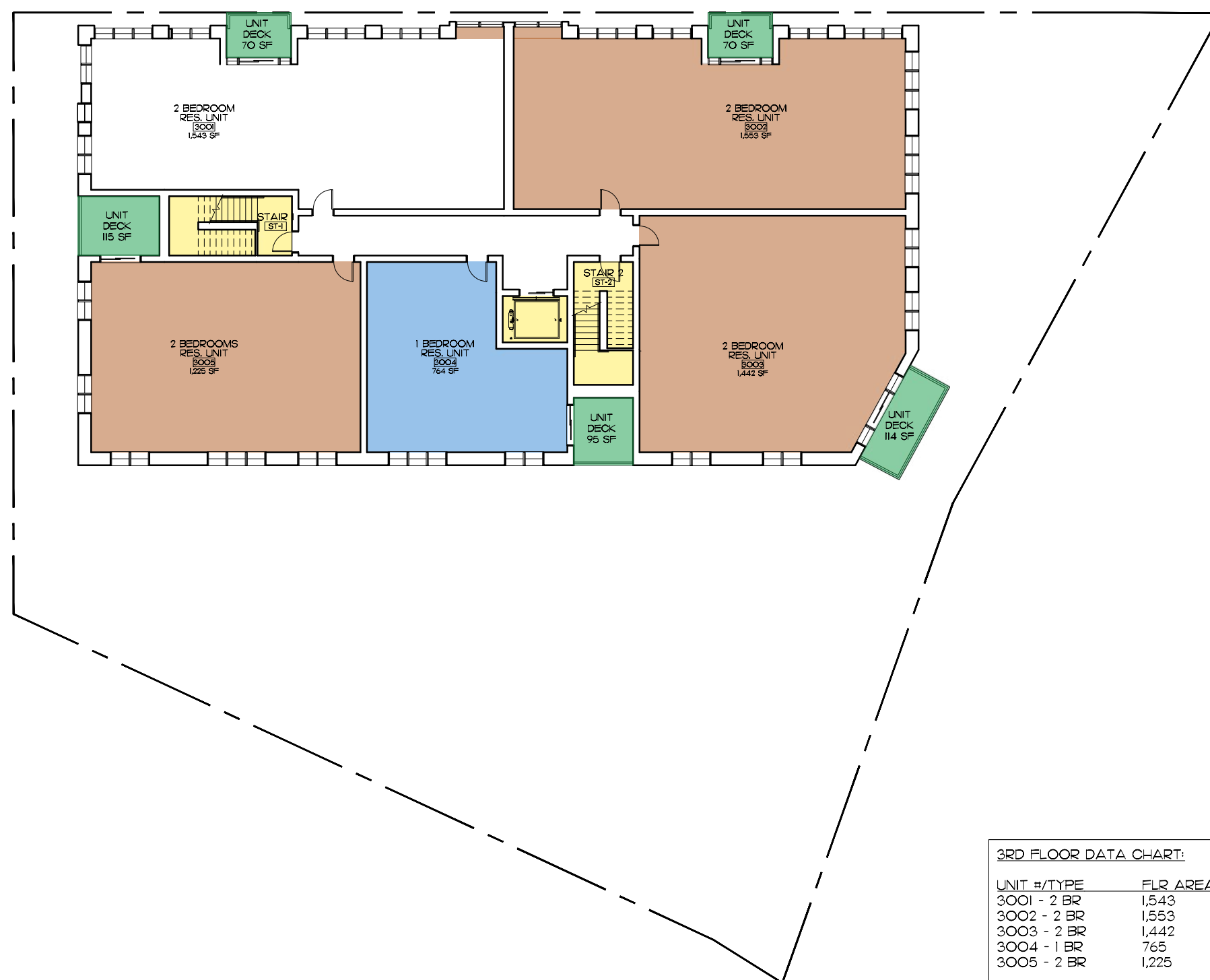
4 FOURTH FLOOR  
Scale: 1 to 20



2ND FLOOR DATA CHART:

| UNIT #/TYPE       | FLR. AREA NET SF | OPEN SP. SF |
|-------------------|------------------|-------------|
| 2001 - 2 BR       | 1,543            | 70          |
| 2002 - 2 BR       | 1,553            | 70          |
| 2003 - 2 BR       | 1,442            | 114         |
| 2004 - 1 BR       | 765              | 95          |
| 2005 - 2 BR       | 1,225            | 115         |
| <b>TOTALS</b>     |                  |             |
| 01- 1BR / 04- 2BR | 6,528            | 464 SF      |

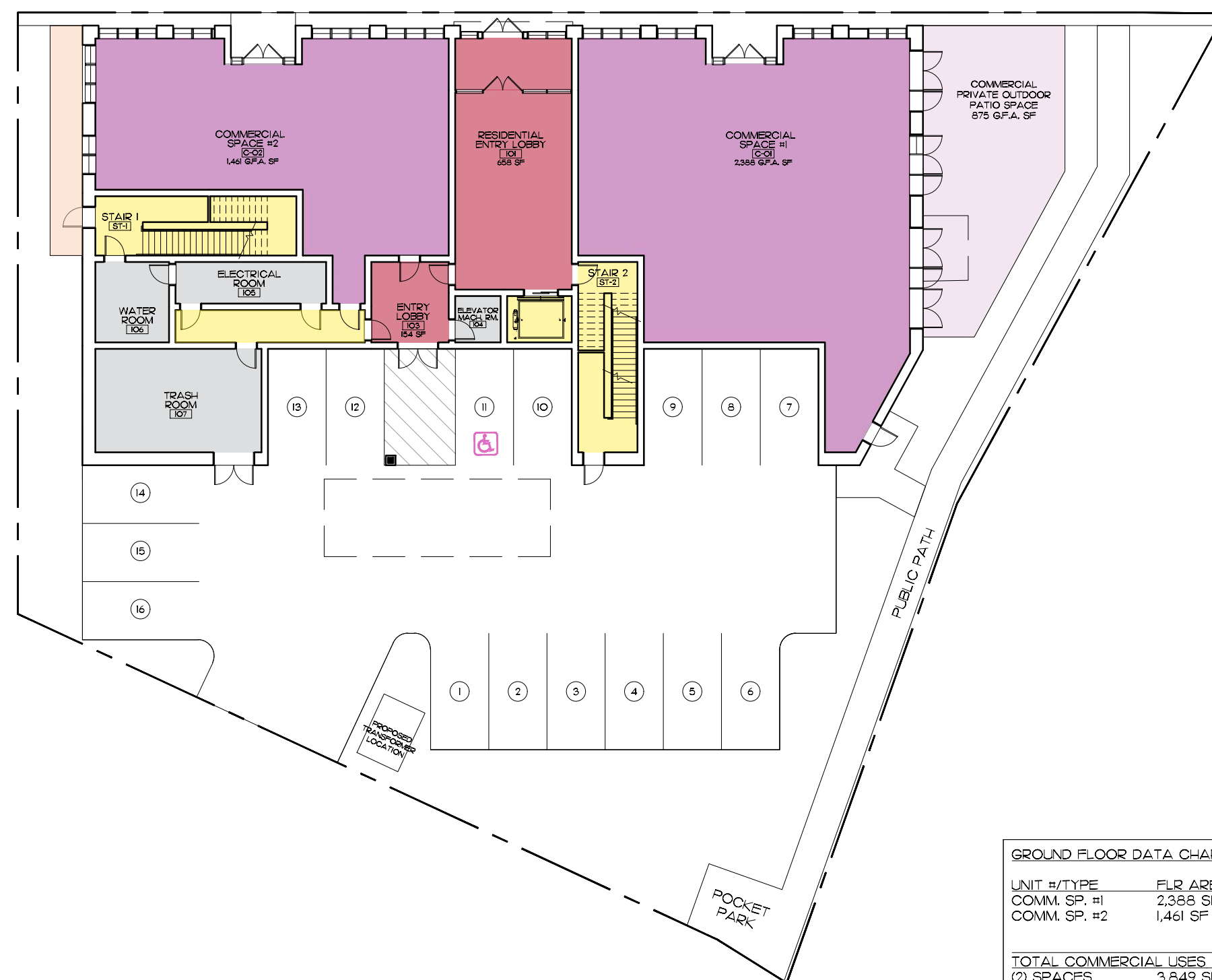
2 SECOND FLOOR  
Scale: 1 to 20



3RD FLOOR DATA CHART:

| UNIT #/TYPE       | FLR. AREA NET SF | OPEN SP. SF |
|-------------------|------------------|-------------|
| 3001 - 2 BR       | 1,543            | 70          |
| 3002 - 2 BR       | 1,553            | 70          |
| 3003 - 2 BR       | 1,442            | 114         |
| 3004 - 1 BR       | 765              | 95          |
| 3005 - 2 BR       | 1,225            | 115         |
| <b>TOTALS</b>     |                  |             |
| 01- 1BR / 04- 2BR | 6,528            | 464 SF      |

3 THIRD FLOOR  
Scale: 1 to 20



GROUND FLOOR DATA CHART:

| UNIT #/TYPE                                    | FLR. AREA NET SF                 | OPEN SP. SF |
|--|----------------------------------|-------------|
| COMM. SP. #1                                   | 2,358 SF                         | 875         |
| COMM. SP. #2                                   | 1,461 SF                         | 0           |
| <b>TOTAL COMMERCIAL USES</b>                   |                                  |             |
| (2) SPACES                                     | 3,819 SF                         | 875         |
| TOTAL COMMERCIAL SPACE ON SITE                 | 4,774 (63.7% VS. GROSS FL. AREA) |             |
| RESIDENT LOBBY                                 | 658 SF                           |             |
| <b>TOTAL FLOOR AREA NET (INCLUDING GARAGE)</b> | 8,637 SF                         |             |
| PUBLIC USE OPEN SPACE                          | 1,308 SF                         |             |
| PRIVATE AMENITY OPEN SPACE                     | 875 SF                           |             |
| GROUND LEVEL OPEN SPACE                        | 3,392 SF                         |             |
| <b>TOTAL OPEN SPACE</b>                        | 5,575 SF                         |             |
| PARKING  | 16 PROVIDED (1.33 PER UNIT)      |             |

1 GROUND FLOOR  
Scale: 1 to 20

TOTAL BUILDING DATA CHART:

EXISTING BUILDING SIZE: +/-7,953 SF COMMERCIAL USE  
EXISTING BUILDING PARKING COUNT: 18 SPACES

NEW BUILDING:

| ITEM         | TOTAL FLR. AREA NET SF |
|--------------|------------------------|
| GROUND       | 8,637                  |
| SECOND       | 8,416                  |
| THIRD        | 8,416                  |
| FOURTH       | 4,540                  |
| <b>TOTAL</b> | 30,009 SF              |

FAR: 1.58 (+/-18,935 LOT AREA)

LOT COVERAGE: 13,070 SF (69%)  
(INCLUDES SURFACE PARKING)

HEIGHT: 44' PROVIDED (45' ALLOWED)

SETBACKS -  
FRONT: 2' (0' MIN - 10' MAX)  
SIDE: 10' & 16' MIN. (15' ALLOWED)  
REAR: NA OR 25' MIN. (15' ALLOWED)  
(REAR & SIDE 15' WHEN ABUTTING RESIDENT USE/ZONE)  
CUMULATIVE: 53' PROVIDED

PARKING: 16 PROVIDED (1.33 PER UNIT)

OPEN SPACE -

| FLR               | PRIVATE                | GREEN |
|-------------------|------------------------|-------|
| 1                 | 875                    | 4,700 |
| 2                 | 464                    |       |
| 3                 | 464                    |       |
| 4                 | 1,305                  |       |
| <b>SUB-TOTAL:</b> | 3,108                  | 4,700 |
| <b>TOTAL</b>      | 7,808 SF (651 SF/UNIT) |       |

UNIT DENSITY PER ACRE (20 PER ACRE REQUIRED)  
PROPOSED: 27.9 UNIT/ACRE (\*)

(\*) WAIVER REQUESTED

TOTAL UNITS: 2 (1-BR) 10 (2-BR) = 12 TOTAL

RELIEF REQUEST CHART

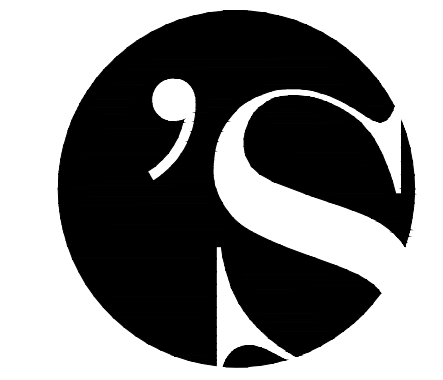
| ITEM                        | REQUIRED        | PROVIDED     | RELIEF (Y/N) |
|-----------------------------|-----------------|--------------|--------------|
| MAX FAR                     | 2.8 (MIXED USE) | 1.58         | N            |
| MIN. LOT FRONTAGE           | 50'             | 156'-9"      | N            |
| MAX LOT COVERAGE            | NA              | 69%          | N            |
| MIN. LOT AREA               | NA              | +/-18,935    | N            |
| MAX. BLDG FRONTAGE          | 300'            | 158'-6"      | N            |
| YARD SETBACKS:              |                 |              |              |
| FRONT (MIN/MAX)             | 0'/0'           | 2'           | N            |
| MIN. SIDE                   | 0' (OR 15')     | 10' /6' MIN. | N            |
| MIN. REAR                   | 0' (OR 15')     | 25' MIN.     | N            |
| INTERIOR BETWEEN BLDGS MIN. | 15'             | NA           | N            |
| DWELLING UNIT PER ACRE      | 20              | 27.9         | Y            |
| MIN. PARKING                | 1.25 (15)       | 1.33 (16)    | N            |

GRAPHIC KEY:

- 2 BR UNIT TYPE
- 1 BR UNIT TYPE
- EGRESS/CIRCULATION
- COMMERCIAL SPACE
- RESIDENT LOBBY
- UTILITY/MECHANICAL SPACE

OPEN SPACE TYPES:

- PRIVATE OPEN SPACE FOR BUILDING TENANT USE
- OPEN SPACE
- SEMI-PUBLIC OPEN SPACE



O'SULLIVAN ARCHITECTS, INC.

ARCHITECTURE ■ INTERIORS ■ PLANNING

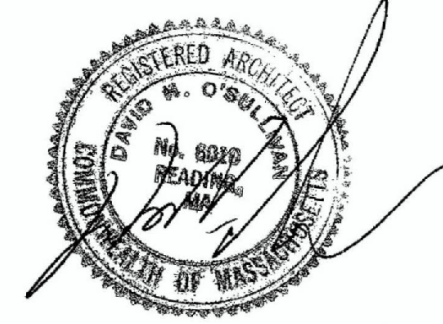
606 MAIN STREET, SUITE 3001  
READING, MASSACHUSETTS 01867

Tel: (781) 439-6166 Fax: (781) 439-6170  
www.osullivanarchitects.com

These drawings and specifications were prepared for use at the location indicated. Publication and use is expressly limited to the identified location. Reuse or reproduction by any method, in whole or in part, is prohibited without the written permission of O'Sullivan Architects, Inc.  
© 2021 O'Sullivan Architects Inc.

25 Haven Street  
Reading, MA

Project Data Page



SCALE: As Noted

ISSUED / DRAWN BY

4/29/2022

© O'Sullivan Architects Inc.

REVISED / REVISED BY

10/24/2022 - REV SUBMISSIONS

11/28/2022 - REV 2 SUBMISSION

JOB NO: 21015

SHEET NUMBER

A0.01





- GENERAL LANDSCAPE NOTES
- AREAS NOT OTHERWISE DEVELOPED SHALL RECEIVE MIN. 6" COMPACTED DEPTH SCREENED LOAM. EXISTING LOAM, IF ANY, SHALL BE STOCKPILED FOR LATER USE.
  - FINISH COVER OVER PLANTING BEDS SHALL INCLUDE 3" MIN. DEPTH PINE MULCH.
  - FINISH SURFACE SHALL BE GRADED FROM A HIGH POINT AT CENTER OF ISLAND OUT TO THE BACK OF CURB. SEE GRADING, DRAINAGE, AND PAVIGN PLAN FOR FINISHES AND GRADES.
  - AT A MIN. TREES AND SHRUBS SHALL BE WATERED BY FLOODING AS FOLLOWS:  
0-3 MONTHS - ONCE PER WEEK  
3-6 MONTHS - TWICE PER MONTH  
6-12 MONTHS - ONCE PER MONTH
  - NUMBER OF PLANT TYPE AND SIZE PROVIDED IN THE PLANT LIST IS FOR CONTRACTORS CONVENIENCE ONLY. IF DISCREPANCY EXISTS BETWEEN THE NUMBER OF PLANTS ON THE LIST AND THE NUMBER SHOWN ON THE DRAWINGS, THE GREATER NUMBER SHALL APPLY.
  - ALL PLANT MATERIAL SHALL BE APPROVED THE LANDSCAPE ARCHITECT OR OWNERS REP PRIOR TO ARRIVAL ON SITE.
  - PLANT MATERIAL SHALL BEAR THE SAME RELATIONSHIP TO FINISHED GRADE AS TO THE ORIGINAL PLANTING GRADE.
  - CONTRACTORS SHALL LOCATE AND MARK ALL UTILITIES PRIOR TO PLANTING. ANY CONFLICTS BETWEEN PLANTING AND UTILITIES SHALL BE IMMEDIATELY REPORTED TO THE LANDSCAPE ARCHITECT SO THAT ALTERNATE PLANTING LOCATIONS CAN BE DETERMINED.
  - NO SUBSTITUTIONS OF PLANT MATERIALS WILL BE ALLOWED WITHOUT THE WRITTEN APPROVAL OF THE LANDSCAPE ARCHITECT.
  - THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL PLANTS AGAINST DAMAGE FROM ON GOING CONSTRUCTION. PROTECTION SHALL BEGIN AT THE TIME THE PLAN IS INSTALLED AND CONTINUE UNTIL FORMAL ACCEPTANCE OF ALL PLANTING.
  - ALL DISTURBED AREAS OUTSIDE THE LIMIT OF USE AREA SHALL BE SEEDED WITH CONSERVATION SEED MIX AND 4" LOAM.

BASIS OF DESIGN PRELIMINARY PLANT SCHEDULE

| QTY.       | KEY  | BOTANICAL NAME                   | COMMON NAME          | SIZE    |
|------------|------|----------------------------------|----------------------|---------|
| TREES      |      |                                  |                      |         |
| 5          | RM   | ACER RUBRUM 'RED SUNSET'         | RED SUNSET MAPLE     | 2.5'-3' |
| 6          | GIN  | GINKGO BILOBA 'AUTUMN GOLD'      | MAIDENHAIR TREE      | 2.5'-3' |
| SHRUBS     |      |                                  |                      |         |
| 3          | ACP  | AZALEA 'CORNELL PINK'            | CORNELL PINK AZALEA  | 2'-3'   |
| 8          | GVBX | BUXUS KOREANA 'GREEN VELVET'     | GREEN VELVET BOXWOOD | 2'-2.5' |
| 4          | KOR  | ROSA 'KNOCKOUT' (IN PLANTERS)    | KNOCKOUT ROSE        | 2 GAL.  |
| 4          | OLHY | HYDRANGEA QUERCIFOLIA            | OAK LEAF HYDRANGEA   | 3 GAL.  |
| PERENNIALS |      |                                  |                      |         |
| 30         | FG   | PENNISETUM ALOPECUROIDES         | FOUNTAIN GRASS       | 1 GAL.  |
| 28         | GER  | GERANIUM MACRORRHIZUM 'SPESSART' | CRANESBILL GERANIUM  | 1 GAL.  |



O'SULLIVAN ARCHITECTS, INC.

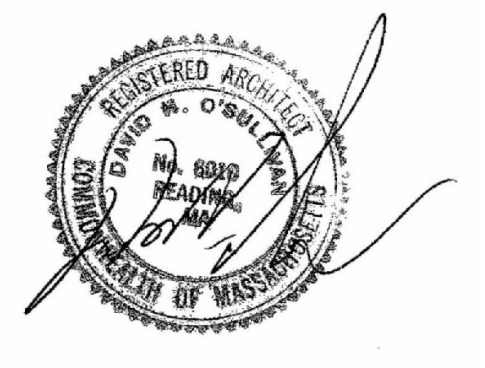
ARCHITECTURE ■ INTERIORS ■ PLANNING  
606 MAIN STREET, SUITE 3001  
READING, MASSACHUSETTS 01867

Tel: (781) 439-6166 Fax: (781) 439-6170  
www.osullivanarchitects.com

These drawings and specifications were prepared for use at the location indicated. Publication and use is expressly limited to the identified location. Reuse or reproduction by any method, in whole or in part, is prohibited without the written permission of O'Sullivan Architects, Inc.  
© 2021 O'Sullivan Architects Inc.

25 Haven Street  
Reading, MA

Schematic  
Landscape  
Layout Plan



SCALE: As Noted

ISSUED / DRAWN BY  
4/29/2022

© O'Sullivan Architects Inc.

REVISED / REVISED BY

11/28/2022 - REV 2 SUBMISSION

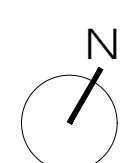
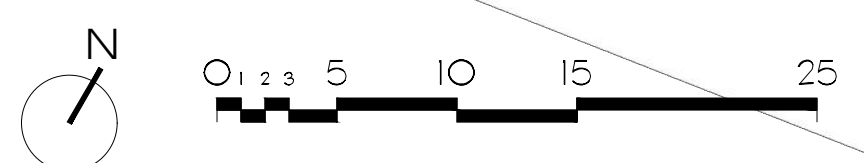
JOB NO: 21015

SHEET NUMBER

A0.02

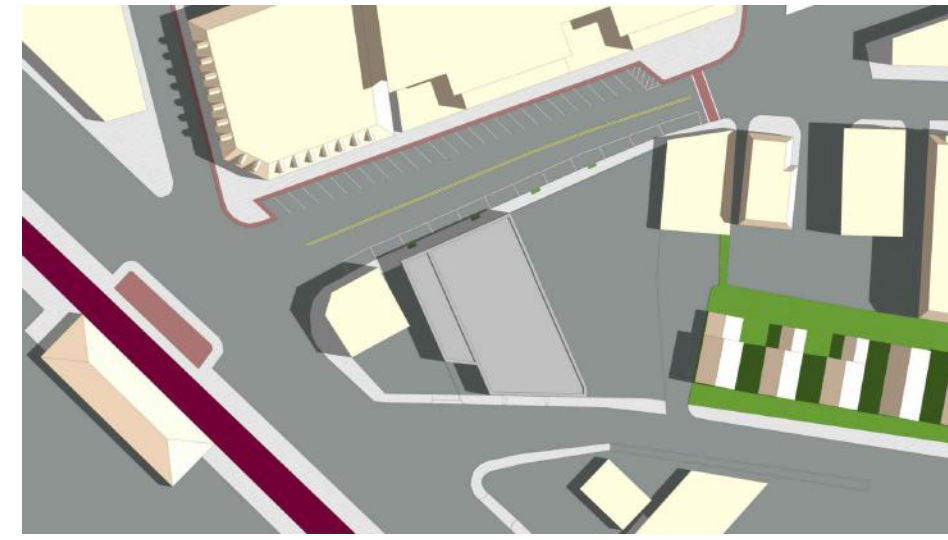
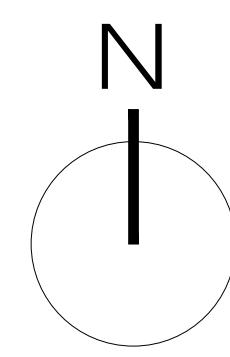
SCHEMATIC LANDSCAPE LAYOUT PLAN

Scale: 1/8" = 1'



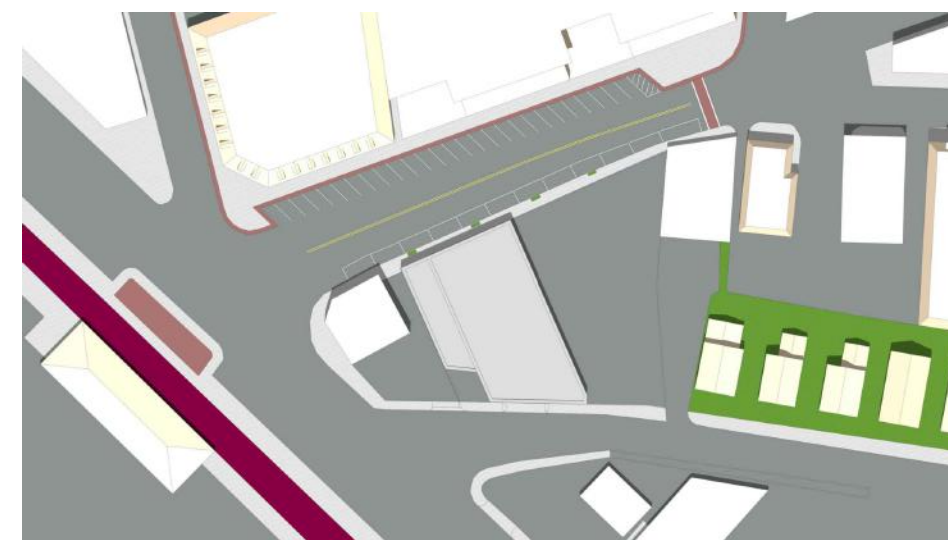


SUMMER SOLSTICE



S9 EXISTING: +/- 9AM  
Scale: 1 to 20

S9 PROPOSED: +/- 9AM  
Scale: 1 to 20



S12 EXISTING: +/- NOON  
Scale: 1 to 20

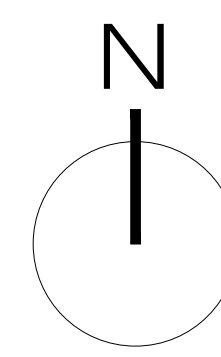
S12 PROPOSED: +/- NOON  
Scale: 1 to 20



S4 EXISTING: +/- 4 PM  
Scale: 1 to 20

S4 PROPOSED: +/- 4PM  
Scale: 1 to 20

FALL/SPRING EQUINOX



F9 EXISTING: +/- 9AM  
Scale: 1 to 20

F9 PROPOSED: +/- 9AM  
Scale: 1 to 20



F12 EXISTING: +/- NOON  
Scale: 1 to 20

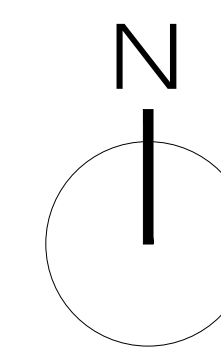
F12 PROPOSED: +/- NOON  
Scale: 1 to 20



F4 EXISTING: +/- 4 PM  
Scale: 1 to 20

F4 PROPOSED: +/- 4PM  
Scale: 1 to 20

WINTER SOLSTICE



W9 EXISTING: +/- 9AM  
Scale: 1 to 20

W9 PROPOSED: +/- 9AM  
Scale: 1 to 20



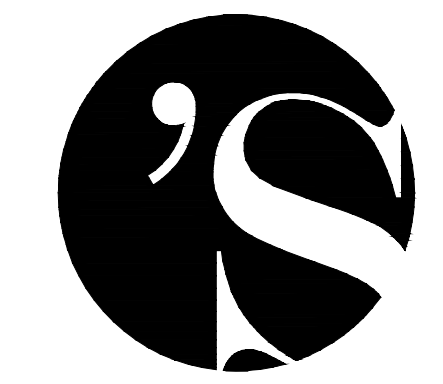
W12 EXISTING: +/- NOON  
Scale: 1 to 20

W12 PROPOSED: +/- NOON  
Scale: 1 to 20



W4 EXISTING: +/- 4 PM  
Scale: 1 to 20

W4 PROPOSED: +/- 4PM  
Scale: 1 to 20



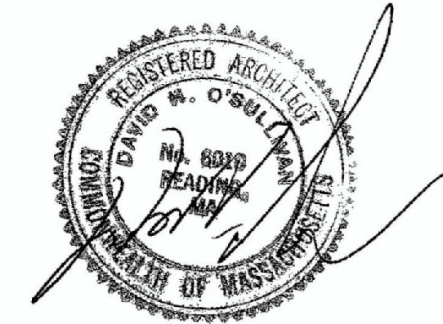
O'SULLIVAN ARCHITECTS, INC.

ARCHITECTURE • INTERIORS • PLANNING  
606 MAIN STREET, SUITE 3001  
READING, MASSACHUSETTS 01867  
Tel: (781) 439-6166 Fax: (781) 439-6170  
www.osullivanarchitects.com

These drawings and specifications were prepared for use at the location indicated. Publication and use is expressly limited to the identified location. Reuse or reproduction by any method, in whole or in part, is prohibited without the written permission of O'Sullivan Architects, Inc.  
© 2021 O'Sullivan Architects Inc.

25 Haven Street  
Reading, MA

SHADOW STUDIES



SCALE: As Noted

ISSUED / DRAWN BY

4/29/2022

© O'Sullivan Architects Inc.

REVISED / REVISED BY

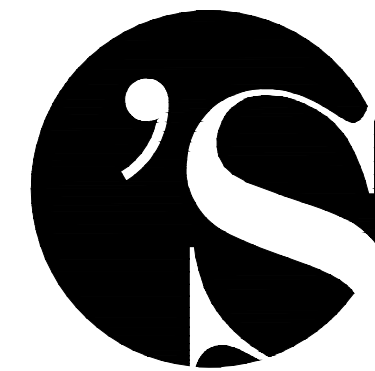
11/28/2022 - REV 2 SUBMISSION

JOB NO: 21015

SHEET NUMBER

A0.03





O'SULLIVAN ARCHITECTS, INC.

ARCHITECTURE ■ INTERIORS ■ PLANNING

606 MAIN STREET, SUITE 3001  
READING, MASSACHUSETTS 01867

Tel: (781) 439-6166 Fax: (781) 439-6170  
www.osullivanarchitects.com

These drawings and specifications were prepared for use at the location indicated. Publication and use is expressly limited to the identified location. Reuse or reproduction by any method, in whole or in part, is prohibited without the written permission of O'Sullivan Architects, Inc.  
© 2021 O'Sullivan Architects, Inc.



25 Haven Street  
Reading, MA

Schematic Light  
Layout &  
Photometric

PREPARED BY  
OTHERS

SCALE: As Noted

ISSUED / DRAWN BY

04/29/2022

© O'Sullivan Architects, Inc.

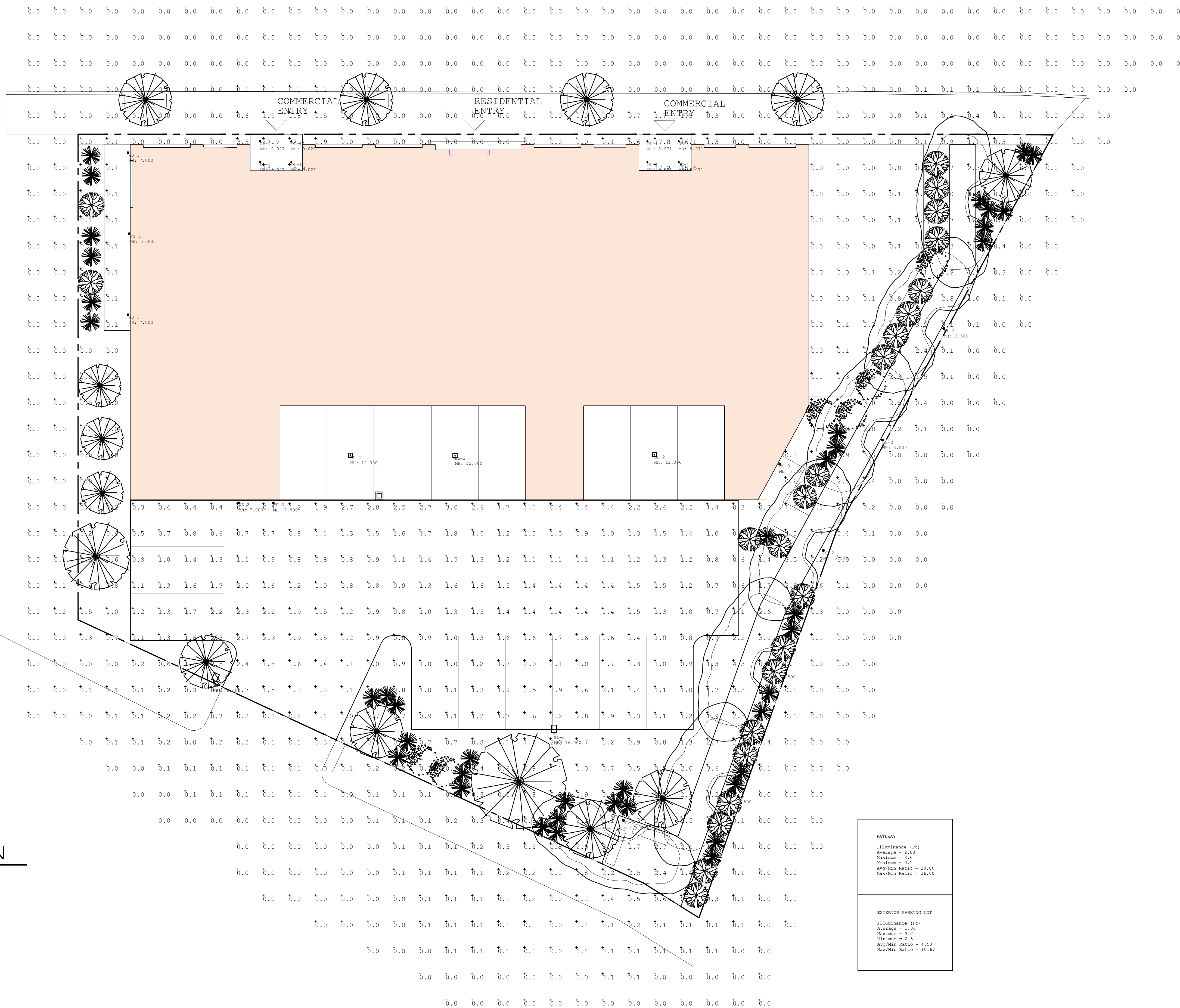
REVISED / REVISED BY

11/28/2022 - REV 2 SUBMISSION

JOB NO: 21015

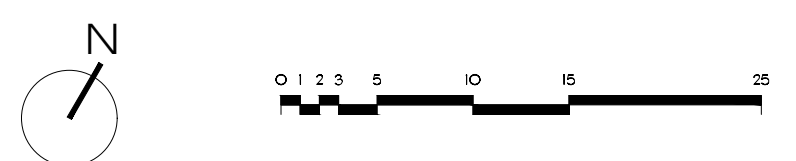
SHEET NUMBER

A0.04



|                             |
|-----------------------------|
| <b>PATHWAY</b>              |
| Illuminance (Fc)            |
| Average = 2.00              |
| Maximum = 3.6               |
| Minimum = 0.1               |
| Avg/Min Ratio = 20.00       |
| Max/Min Ratio = 36.00       |
| <b>EXTERIOR PARKING LOT</b> |
| Illuminance (Fc)            |
| Average = 1.36              |
| Maximum = 3.2               |
| Minimum = 0.3               |
| Avg/Min Ratio = 4.53        |
| Max/Min Ratio = 10.67       |

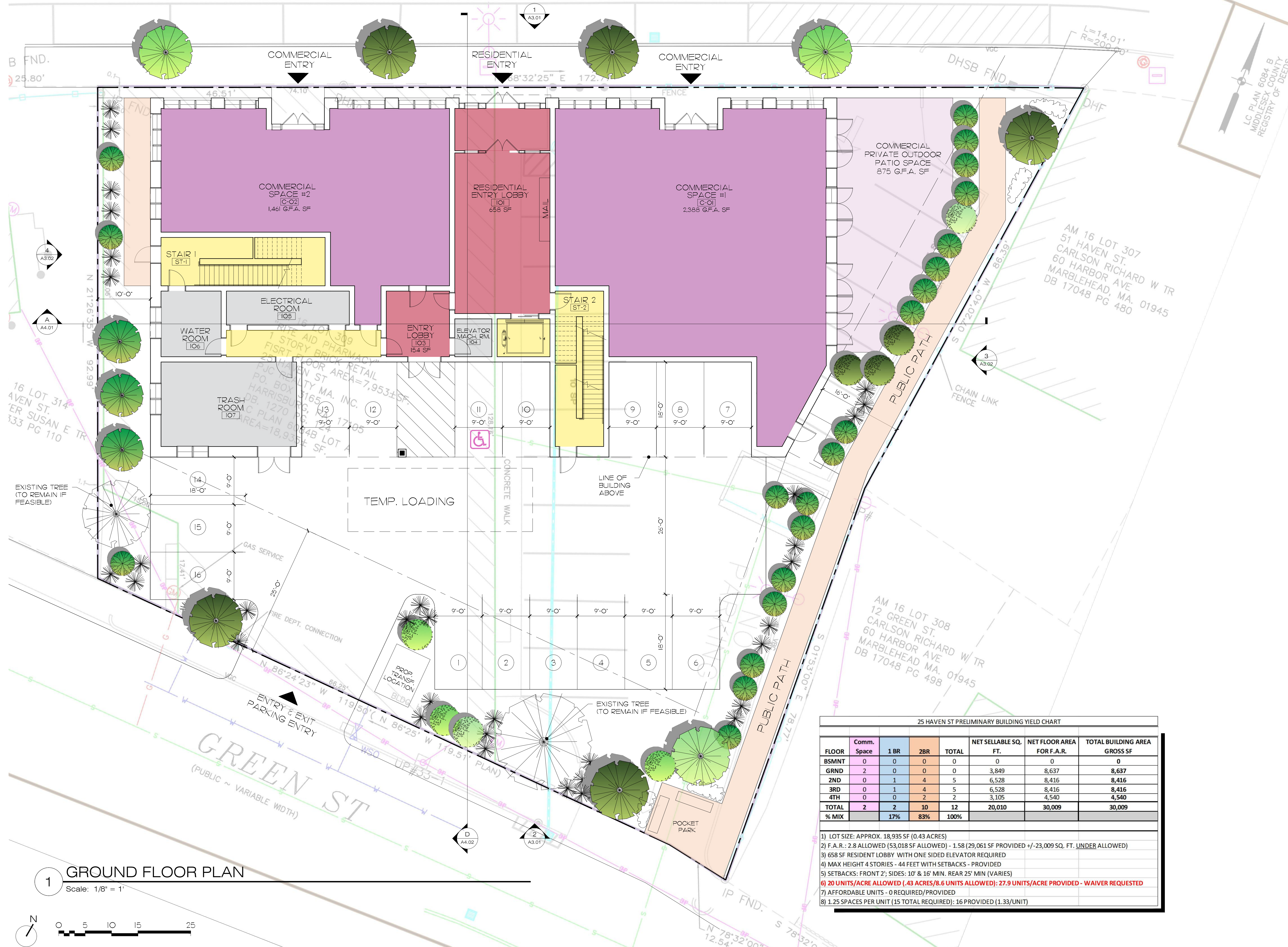
**L SCHEMATIC LIGHTING PLAN**  
Scale: 1 to 10'



| Symbol | Tag | Qty | Label | Arrangement | LLF   | Description                   | Lum. Watts | Lum. Lumens |
|--------|-----|-----|-------|-------------|-------|-------------------------------|------------|-------------|
| ⊕      |     | 7   | BL-2  | Single      | 0.900 | PA7R-NU3HS-12L-010-4K7        | 14         | 744         |
| ⊕      |     | 8   | DL-1  | Single      | 0.900 | ENCL2SF-L081, ENCL2SFD-930W-W | 7.4        | 648         |
| ⊕      |     | 3   | DL-2  | Single      | 0.900 | LSQ1-25-4K7-UNV-X             | 24.3       | 3170        |
| ⊕      |     | 1   | SL-1  | Single      | 0.900 | VP-1-160L-35-4K7-4F-BC        | 34.9       | 2687        |
| ⊕      |     | 1   | SL-3  | Single      | 0.900 | VP-1-160L-35-4K-4F            | 34.9       | 4567        |
| ⊕      |     | 6   | WS-3  | Single      | 0.900 | BRIAN MT2                     | 33.51      | 193         |

| Label                | CalcType    | Units | Avg  | Max  | Min | Avg/Min | Max/Min | Grid Z |
|----------------------|-------------|-------|------|------|-----|---------|---------|--------|
| GRID AT GRADE        | Illuminance | Fc    | 0.67 | 18.2 | 0.0 | N.A.    | N.A.    | 0      |
| EXTERIOR PARKING LOT | Illuminance | Fc    | 1.36 | 3.2  | 0.3 | 4.53    | 10.67   |        |
| PATHWAY              | Illuminance | Fc    | 2.00 | 3.6  | 0.1 | 20.00   | 36.00   |        |





**O'SULLIVAN ARCHITECTS, INC.**

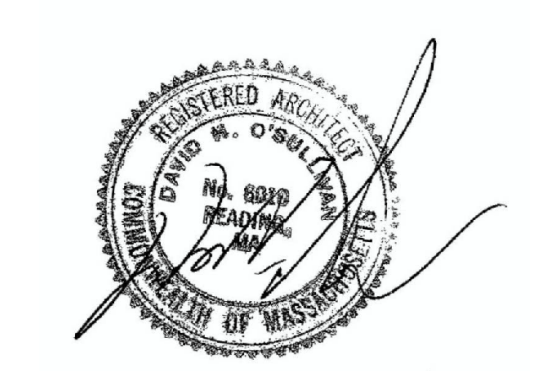
ARCHITECTURE ■ INTERIORS ■ PLANNING  
 606 MAIN STREET, SUITE 3001  
 READING, MASSACHUSETTS 01867

Tel: (781) 439-6166 Fax: (781) 439-6170  
 www.osullivanarchitects.com

These drawings and specifications were prepared for use at the location indicated. Publication and use is expressly limited to the identified location. Reuse or reproduction by any method, in whole or in part, is prohibited without the written permission of O'Sullivan Architects, Inc.  
 © 2021 O'Sullivan Architects Inc.

25 Haven Street  
 Reading, MA

Ground Floor Plan



SCALE: As Noted  
 ISSUED / DRAWN BY  
 04/29/2022  
 © O'Sullivan Architects Inc.  
 REVISED / REVISED BY  
 10/24/2022 - REV SUBMISSION  
 11/28/2022 - REV 2 SUBMISSION

JOB NO: 21015

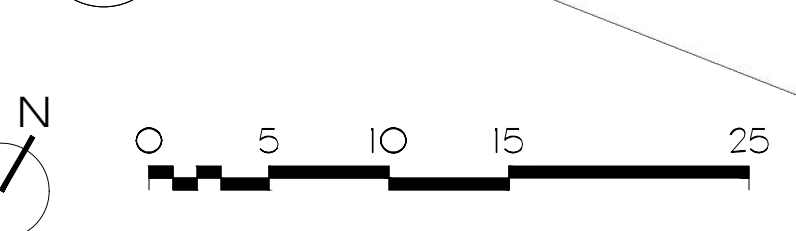
SHEET NUMBER

**A1.01**

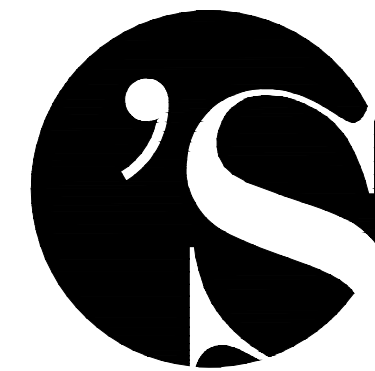
| FLOOR        | Comm. Space | 1 BR       | 2 BR       | TOTAL       | NET SELLABLE SQ. FT. | NET FLOOR AREA FOR F.A.R. | TOTAL BUILDING AREA GROSS SF |
|--------------|-------------|------------|------------|-------------|----------------------|---------------------------|------------------------------|
| BSMNT        | 0           | 0          | 0          | 0           | 0                    | 0                         | 0                            |
| GRND         | 2           | 0          | 0          | 0           | 3,849                | 8,637                     | 8,637                        |
| 2ND          | 0           | 1          | 4          | 5           | 6,528                | 8,416                     | 8,416                        |
| 3RD          | 0           | 1          | 4          | 5           | 6,528                | 8,416                     | 8,416                        |
| 4TH          | 0           | 0          | 2          | 2           | 3,105                | 4,540                     | 4,540                        |
| <b>TOTAL</b> | <b>2</b>    | <b>2</b>   | <b>10</b>  | <b>12</b>   | <b>20,010</b>        | <b>30,009</b>             | <b>30,009</b>                |
| <b>% MIX</b> | <b>17%</b>  | <b>17%</b> | <b>83%</b> | <b>100%</b> |                      |                           |                              |

- 1) LOT SIZE: APPROX. 18,935 SF (0.43 ACRES)
- 2) F.A.R.: 2.8 ALLOWED (53,018 SF ALLOWED) - 1.58 (29,061 SF PROVIDED +/- 23,009 SQ. FT. UNDER ALLOWED)
- 3) 658 SF RESIDENT LOBBY WITH ONE SIDED ELEVATOR REQUIRED
- 4) MAX HEIGHT 4 STORIES - 44 FEET WITH SETBACKS - PROVIDED
- 5) SETBACKS: FRONT 2'; SIDES: 10' & 16' MIN. REAR 25' MIN (VARIES)
- 6) **20 UNITS/ACRE ALLOWED (.43 ACRES/8.6 UNITS ALLOWED); 27.9 UNITS/ACRE PROVIDED - WAIVER REQUESTED**
- 7) AFFORDABLE UNITS - 0 REQUIRED/PROVIDED
- 8) 1.25 SPACES PER UNIT (15 TOTAL REQUIRED); 16 PROVIDED (1.33/UNIT)

**1 GROUND FLOOR PLAN**







O'SULLIVAN ARCHITECTS, INC.

ARCHITECTURE • INTERIORS • PLANNING

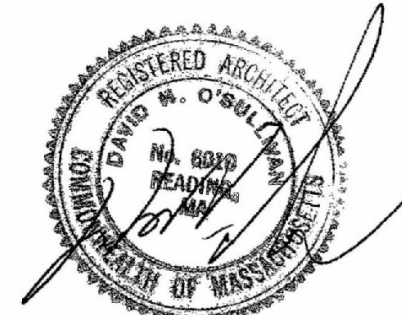
606 MAIN STREET, SUITE 3001  
READING, MASSACHUSETTS 01867

Tel: (781) 439-6166 Fax: (781) 439-6170  
www.osullivanarchitects.com

These drawings and specifications were prepared for use at the location indicated. Publication and use is expressly limited to the identified location. Reuse or reproduction by any method, in whole or in part, is prohibited without the written permission of O'Sullivan Architects, Inc.  
© 2021 O'Sullivan Architects, Inc.

25 Haven Street  
Reading, MA

Second Floor Plan



SCALE: As Noted

ISSUED / DRAWN BY

4/29/2022

© O'Sullivan Architects, Inc.

REVISED / REVISED BY

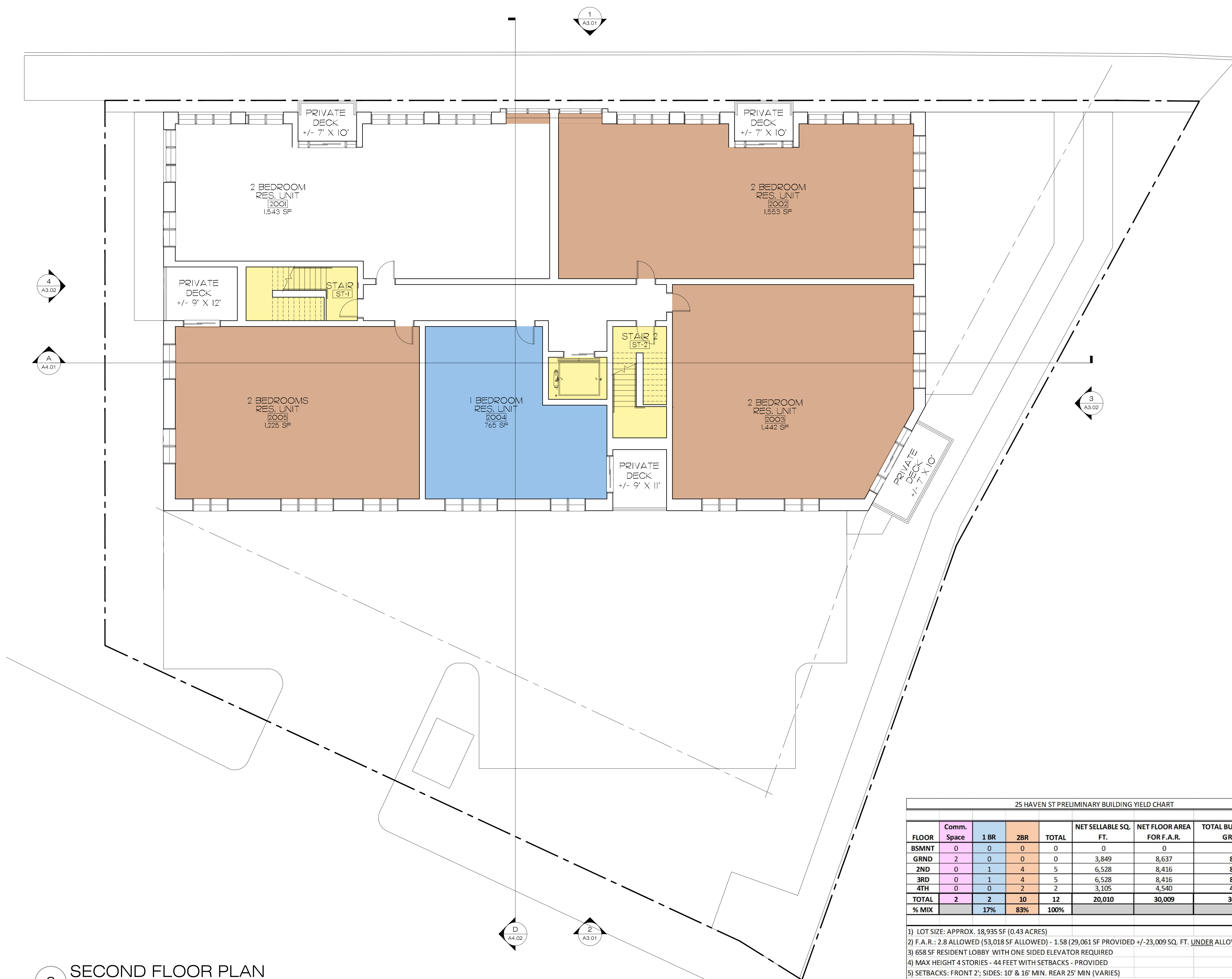
10/24/2022 - REV SUBMISSION

11/28/2022 - REV 2 SUBMISSION

JOB NO: 21015

SHEET NUMBER

A1.02

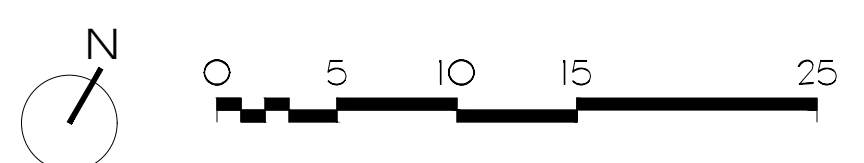


| 25 HAVEN ST PRELIMINARY BUILDING YIELD CHART |             |          |           |           |                      |                           |                              |
|--|-------------|----------|-----------|-----------|----------------------|---------------------------|------------------------------|
| FLOOR  | Comm. Space | 1 BR     | 2BR       | TOTAL     | NET SELLABLE SQ. FT. | NET FLOOR AREA FOR F.A.R. | TOTAL BUILDING AREA GROSS SF |
| BSMNT  | 0           | 0        | 0         | 0         | 0                    | 0                         | 0                            |
| GRND   | 2           | 0        | 0         | 0         | 3,849                | 8,637                     | 8,637                        |
| 2ND  | 0           | 1        | 4         | 5         | 6,528                | 8,416                     | 8,416                        |
| 3RD  | 0           | 1        | 4         | 5         | 6,528                | 8,416                     | 8,416                        |
| 4TH  | 0           | 0        | 2         | 2         | 3,105                | 4,540                     | 4,540                        |
| <b>TOTAL</b>                                 | <b>2</b>    | <b>2</b> | <b>10</b> | <b>12</b> | <b>20,010</b>        | <b>30,009</b>             | <b>30,009</b>                |
| % MIX  |             | 17%      | 83%       | 100%      |                      |                           |                              |

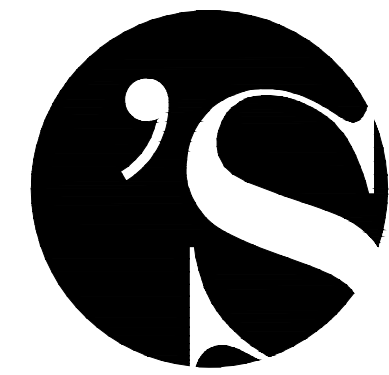
- 1) LOT SIZE: APPROX. 18,935 SF (0.43 ACRES)
- 2) F.A.R.: 2.8 ALLOWED (53,018 SF ALLOWED) - 1.58 (29,061 SF PROVIDED +/- 23,009 SQ. FT. UNDER ALLOWED)
- 3) 658 SF RESIDENT LOBBY WITH ONE SIDED ELEVATOR REQUIRED
- 4) MAX HEIGHT 4 STORIES - 44 FEET WITH SETBACKS - PROVIDED
- 5) SETBACKS: FRONT 2'; SIDES: 10' & 16' MIN. REAR 25' MIN (VARIES)
- 6) 20 UNITS/ACRE ALLOWED (.43 ACRES/8.6 UNITS ALLOWED); 27.9 UNITS/ACRE PROVIDED - WAIVER REQUESTED
- 7) AFFORDABLE UNITS - 0 REQUIRED/PROVIDED
- 8) 1.25 SPACES PER UNIT (15 TOTAL REQUIRED); 16 PROVIDED (1.33/UNIT)

2 SECOND FLOOR PLAN

Scale: 1/8" = 1'







O'SULLIVAN ARCHITECTS, INC.

ARCHITECTURE ■ INTERIORS ■ PLANNING

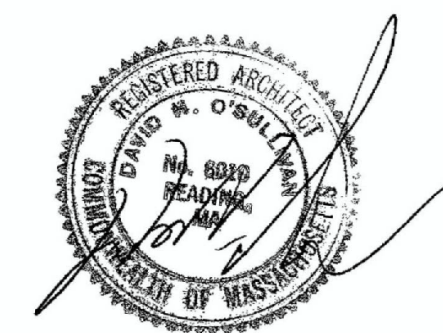
606 MAIN STREET, SUITE 3001  
READING, MASSACHUSETTS 01867

Tel: (781) 439-6166 Fax: (781) 439-6170  
www.osullivanarchitects.com

These drawings and specifications were prepared for use at the location indicated. Publication and use is expressly limited to the identified location. Reuse or reproduction by any method, in whole or in part, is prohibited without the written permission of O'Sullivan Architects, Inc.  
© 2021 O'Sullivan Architects, Inc.

25 Haven Street  
Reading, MA

Third Floor Plan



SCALE: As Noted

ISSUED / DRAWN BY

4/29/2022

© O'Sullivan Architects, Inc.

REVISED / REVISED BY

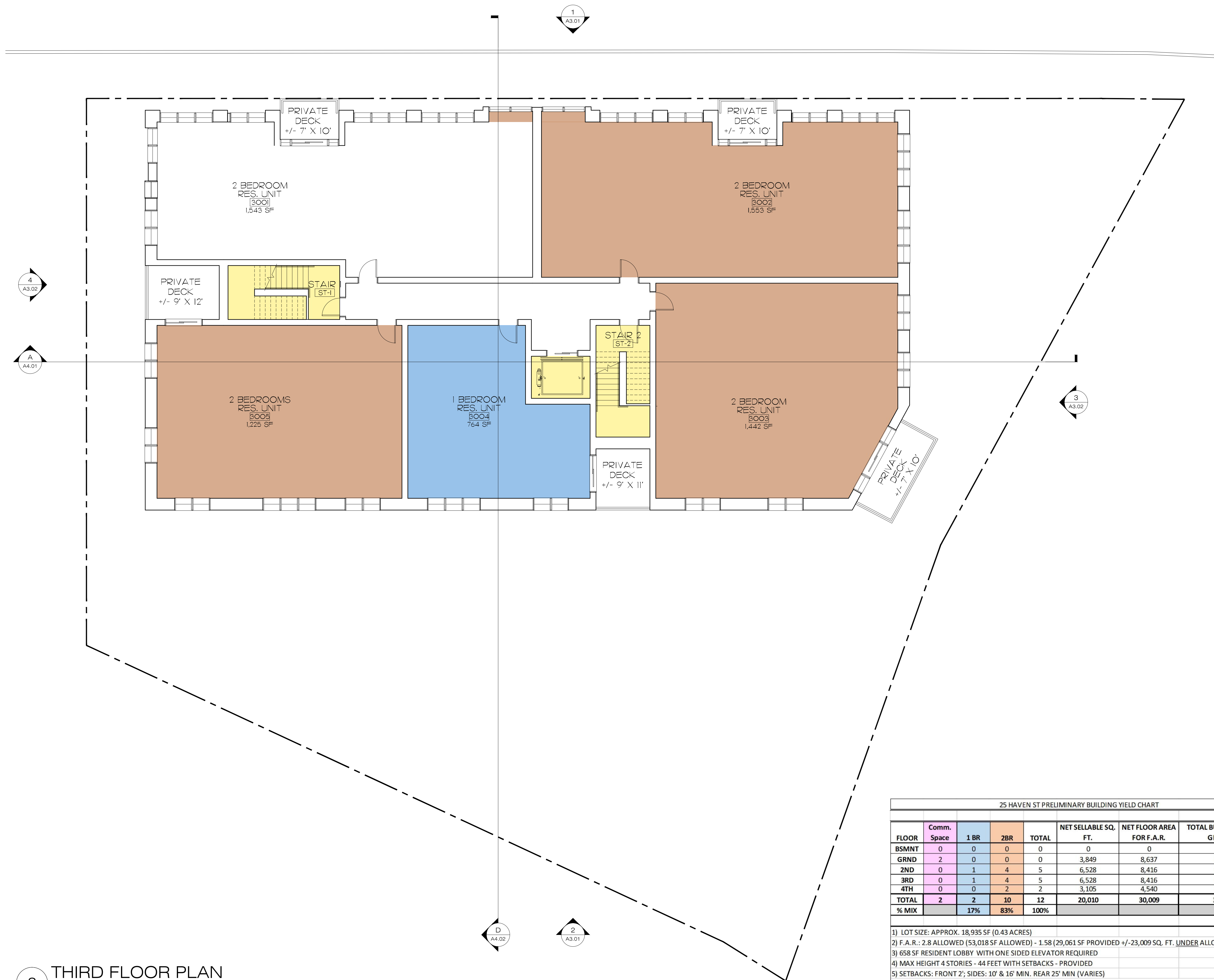
10/24/2022 - REV SUBMISSION

11/28/2022 - REV 2 SUBMISSION

JOB NO: 21015

SHEET NUMBER

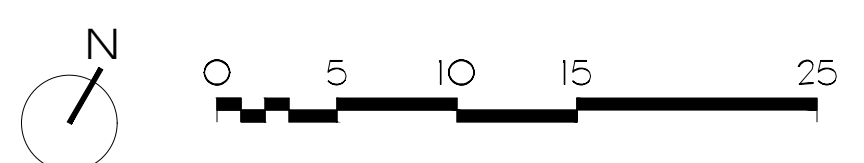
A1.03



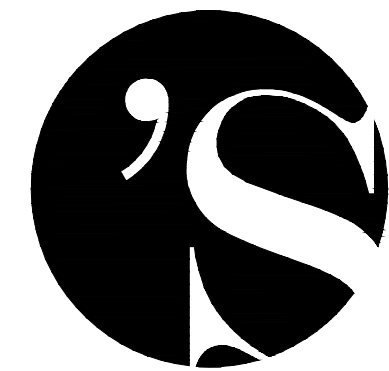
| 25 HAVEN ST PRELIMINARY BUILDING YIELD CHART |             |          |           |           |                      |                           |                              |
|--|-------------|----------|-----------|-----------|----------------------|---------------------------|------------------------------|
| FLOOR  | Comm. Space | 1 BR     | 2BR       | TOTAL     | NET SELLABLE SQ. FT. | NET FLOOR AREA FOR F.A.R. | TOTAL BUILDING AREA GROSS SF |
| BSMNT  | 0           | 0        | 0         | 0         | 0                    | 0                         | 0                            |
| GRND   | 2           | 0        | 0         | 0         | 3,849                | 8,637                     | 8,637                        |
| 2ND  | 0           | 1        | 4         | 5         | 6,528                | 8,416                     | 8,416                        |
| 3RD  | 0           | 1        | 4         | 5         | 6,528                | 8,416                     | 8,416                        |
| 4TH  | 0           | 0        | 2         | 2         | 3,105                | 4,540                     | 4,540                        |
| <b>TOTAL</b>                                 | <b>2</b>    | <b>2</b> | <b>10</b> | <b>12</b> | <b>20,010</b>        | <b>30,009</b>             | <b>30,009</b>                |
| % MIX  |             | 17%      | 83%       | 100%      |                      |                           |                              |

- 1) LOT SIZE: APPROX. 18,935 SF (0.43 ACRES)
- 2) F.A.R.: 2.8 ALLOWED (53,018 SF ALLOWED) - 1.58 (29,061 SF PROVIDED +/- 23,009 SQ. FT. UNDER ALLOWED)
- 3) 658 SF RESIDENT LOBBY WITH ONE SIDED ELEVATOR REQUIRED
- 4) MAX HEIGHT 4 STORIES - 44 FEET WITH SETBACKS - PROVIDED
- 5) SETBACKS: FRONT 2'; SIDES: 10' & 16' MIN. REAR 25' MIN (VARIES)
- 6) **20 UNITS/ACRE ALLOWED (.43 ACRES/8.6 UNITS ALLOWED); 27.9 UNITS/ACRE PROVIDED - WAIVER REQUESTED**
- 7) AFFORDABLE UNITS - 0 REQUIRED/PROVIDED
- 8) 1.25 SPACES PER UNIT (15 TOTAL REQUIRED); 16 PROVIDED (1.33/UNIT)

3 THIRD FLOOR PLAN  
Scale: 1/8" = 1'







O'SULLIVAN ARCHITECTS, INC.

ARCHITECTURE ■ INTERIORS ■ PLANNING

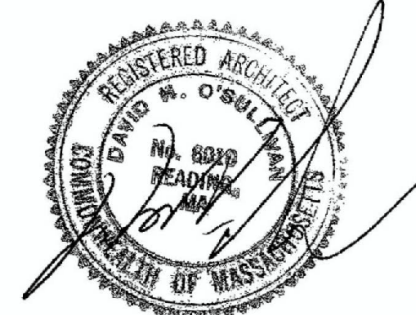
606 MAIN STREET, SUITE 3001  
READING, MASSACHUSETTS 01867

Tel: (781) 439-6166 Fax: (781) 439-6170  
www.osullivanarchitects.com

These drawings and specifications were prepared for use at the location indicated. Publication and use is expressly limited to the identified location. Reuse or reproduction by any method, in whole or in part, is prohibited without the written permission of O'Sullivan Architects, Inc.  
© 2021 O'Sullivan Architects Inc.

25 Haven Street  
Reading, MA

Fourth Floor Plan



SCALE: As Noted

ISSUED / DRAWN BY

4/29/2022

© O'Sullivan Architects Inc.

REVISED / REVISED BY

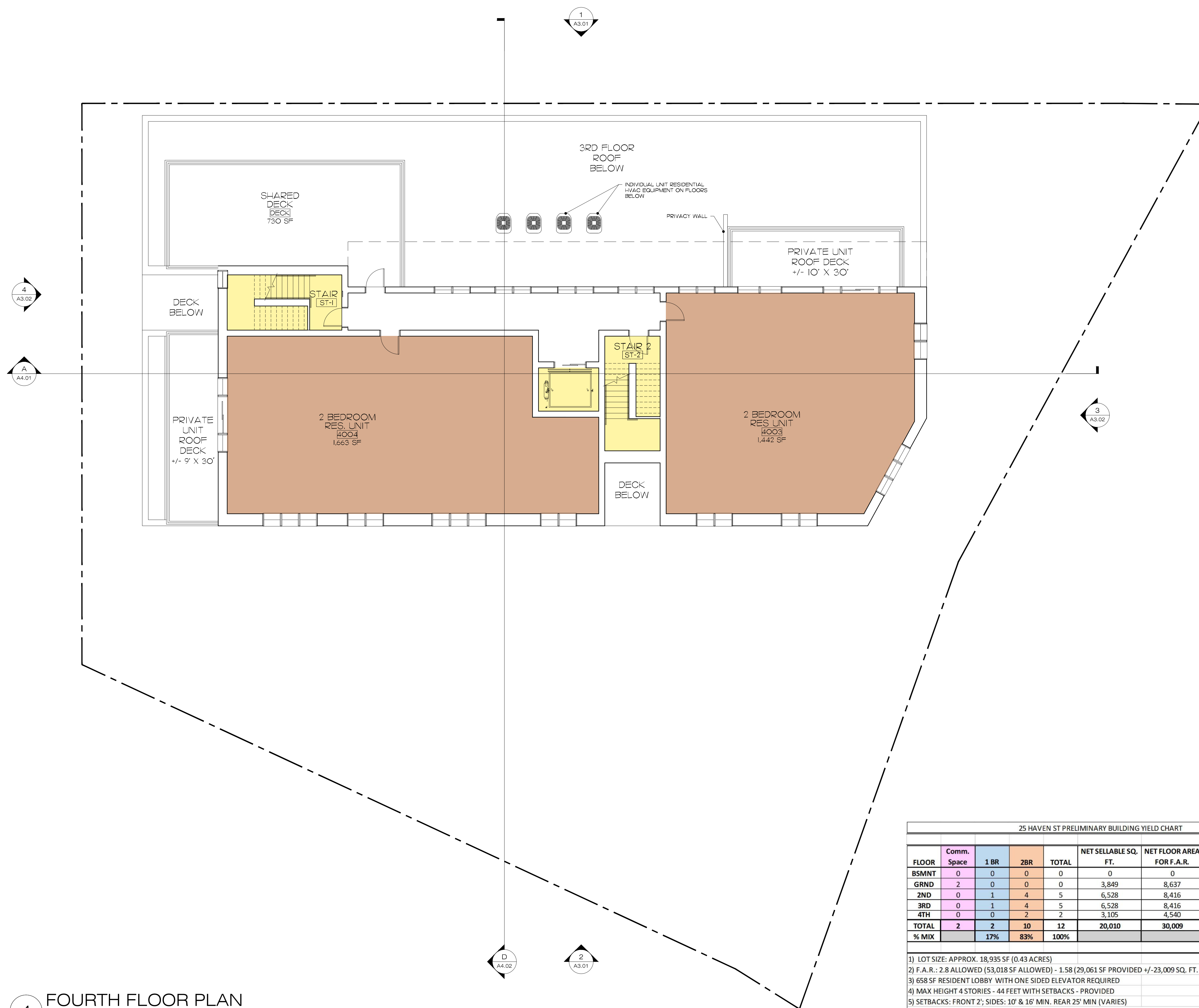
10/24/2022 - REV SUBMISSION

11/28/2022 - REV 2 SUBMISSION

JOB NO: 21015

SHEET NUMBER

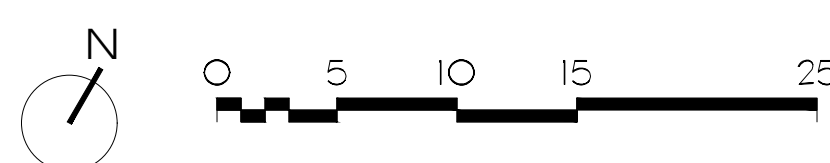
A1.04



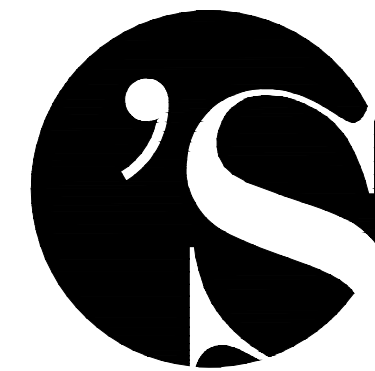
| 25 HAVEN ST PRELIMINARY BUILDING YIELD CHART |             |          |           |           |                      |                           |                              |
|--|-------------|----------|-----------|-----------|----------------------|---------------------------|------------------------------|
| FLOOR  | Comm. Space | 1 BR     | 2BR       | TOTAL     | NET SELLABLE SQ. FT. | NET FLOOR AREA FOR F.A.R. | TOTAL BUILDING AREA GROSS SF |
| BSMNT  | 0           | 0        | 0         | 0         | 0                    | 0                         | 0                            |
| GRND   | 2           | 0        | 0         | 0         | 3,849                | 8,637                     | 8,637                        |
| 2ND  | 0           | 1        | 4         | 5         | 6,528                | 8,416                     | 8,416                        |
| 3RD  | 0           | 1        | 4         | 5         | 6,528                | 8,416                     | 8,416                        |
| 4TH  | 0           | 0        | 2         | 2         | 3,105                | 4,540                     | 4,540                        |
| <b>TOTAL</b>                                 | <b>2</b>    | <b>2</b> | <b>10</b> | <b>12</b> | <b>20,010</b>        | <b>30,009</b>             | <b>30,009</b>                |
| % MIX  |             | 17%      | 83%       | 100%      |                      |                           |                              |

- 1) LOT SIZE: APPROX. 18,935 SF (0.43 ACRES)
- 2) F.A.R.: 2.8 ALLOWED (53,018 SF ALLOWED) - 1.58 (29,061 SF PROVIDED +/- 23,009 SQ. FT. UNDER ALLOWED)
- 3) 658 SF RESIDENT LOBBY WITH ONE SIDED ELEVATOR REQUIRED
- 4) MAX HEIGHT 4 STORIES - 44 FEET WITH SETBACKS - PROVIDED
- 5) SETBACKS: FRONT 2'; SIDES: 10' & 16' MIN. REAR 25' MIN (VARIES)
- 6) 20 UNITS/ACRE ALLOWED (.43 ACRES/8.6 UNITS ALLOWED); 27.9 UNITS/ACRE PROVIDED - WAIVER REQUESTED
- 7) AFFORDABLE UNITS - 0 REQUIRED/PROVIDED
- 8) 1.25 SPACES PER UNIT (15 TOTAL REQUIRED); 16 PROVIDED (1.33/UNIT)

4 FOURTH FLOOR PLAN  
Scale: 1/8" = 1'







O'SULLIVAN ARCHITECTS, INC.

ARCHITECTURE ■ INTERIORS ■ PLANNING

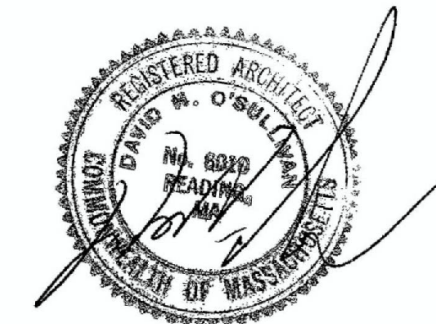
606 MAIN STREET, SUITE 3001  
READING, MASSACHUSETTS 01867

Tel: (781) 439-6166 Fax: (781) 439-6170  
www.osullivanarchitects.com

These drawings and specifications were prepared for use at the location indicated. Publication and use is expressly limited to the identified location. Reuse or reproduction by any method, in whole or in part, is prohibited without the written permission of O'Sullivan Architects, Inc.  
© 2021 O'Sullivan Architects Inc.

25 Haven Street  
Reading, MA

Roof Level Plan



SCALE: As Noted

ISSUED / DRAWN BY

4/29/2022

© O'Sullivan Architects Inc.

REVISED / REVISED BY

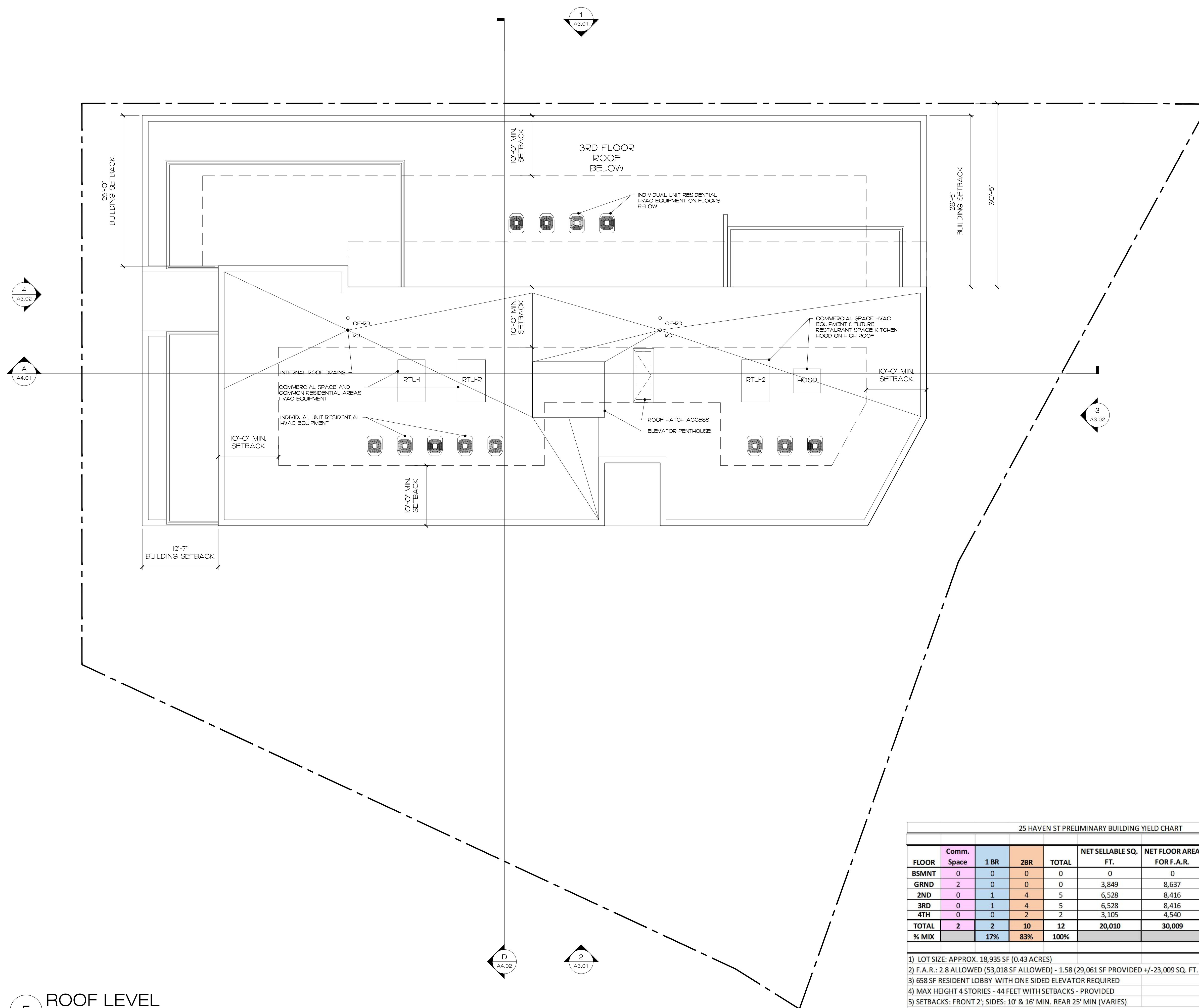
10/24/2022 - REV SUBMISSION

11/28/2022 - REV 2 SUBMISSION

JOB NO: 21015

SHEET NUMBER

A1.05

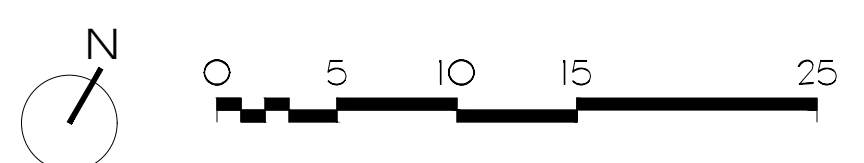


| 25 HAVEN ST PRELIMINARY BUILDING YIELD CHART |             |          |           |           |                      |                           |                              |
|--|-------------|----------|-----------|-----------|----------------------|---------------------------|------------------------------|
| FLOOR  | Comm. Space | 1 BR     | 2BR       | TOTAL     | NET SELLABLE SQ. FT. | NET FLOOR AREA FOR F.A.R. | TOTAL BUILDING AREA GROSS SF |
| BSMNT  | 0           | 0        | 0         | 0         | 0                    | 0                         | 0                            |
| GRND   | 2           | 0        | 0         | 0         | 3,849                | 8,637                     | 8,637                        |
| 2ND  | 0           | 1        | 4         | 5         | 6,528                | 8,416                     | 8,416                        |
| 3RD  | 0           | 1        | 4         | 5         | 6,528                | 8,416                     | 8,416                        |
| 4TH  | 0           | 0        | 2         | 2         | 3,105                | 4,540                     | 4,540                        |
| <b>TOTAL</b>                                 | <b>2</b>    | <b>2</b> | <b>10</b> | <b>12</b> | <b>20,010</b>        | <b>30,009</b>             | <b>30,009</b>                |
| % MIX  |             | 17%      | 83%       | 100%      |                      |                           |                              |

- 1) LOT SIZE: APPROX. 18,935 SF (0.43 ACRES)
- 2) F.A.R.: 2.8 ALLOWED (53,018 SF ALLOWED) - 1.58 (29,061 SF PROVIDED +/- 23,009 SQ. FT. UNDER ALLOWED)
- 3) 658 SF RESIDENT LOBBY WITH ONE SIDED ELEVATOR REQUIRED
- 4) MAX HEIGHT 4 STORIES - 44 FEET WITH SETBACKS - PROVIDED
- 5) SETBACKS: FRONT 2'; SIDES: 10' & 16' MIN. REAR 25' MIN (VARIES)
- 6) 20 UNITS/ACRE ALLOWED (.43 ACRES/8.6 UNITS ALLOWED); 27.9 UNITS/ACRE PROVIDED - WAIVER REQUESTED
- 7) AFFORDABLE UNITS - 0 REQUIRED/PROVIDED
- 8) 1.25 SPACES PER UNIT (15 TOTAL REQUIRED); 16 PROVIDED (1.33/UNIT)

5 ROOF LEVEL

Scale: 1/8" = 1'







**1 FRONT ELEVATION (HAVEN STREET)**




**2 REAR ELEVATION (GREEN STREET)**

Scale: 1/8" = 1'


**EXTERIOR SIDING FINISHES KEY (AT UPPER LEVELS)**



BASIS OF DESIGN NICHIBA PANEL RAIN SCREEN SYSTEMS: SMOOTH & RIBBED PANEL SYSTEMS (EXAMPLE PHOTOS ATTACHED)

RECESSED SMOOTH



RECESSED RIDGE





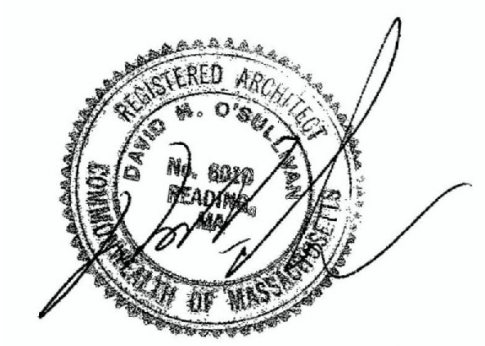
**O'SULLIVAN ARCHITECTS, INC.**

ARCHITECTURE ■ INTERIORS ■ PLANNING  
 606 MAIN STREET, SUITE 3001  
 READING, MASSACHUSETTS 01867  
 Tel: (781) 439-6166 Fax: (781) 439-6170  
 www.osullivanarchitects.com

These drawings and specifications were prepared for use at the location indicated. Publication and use is expressly limited to the identified location. Reuse or reproduction by any method, in whole or in part, is prohibited without the written permission of O'Sullivan Architects, Inc.  
 © 2021 O'Sullivan Architects Inc.

25 Haven Street  
 Reading, MA

Elevations



SCALE: As Noted  
 ISSUED / DRAWN BY  
 4/29/2022  
 © O'Sullivan Architects Inc.  
 REVISED / REVISED BY  
 10/24/2022 - REV SUBMISSION  
 11/28/2022 - REV 2 SUBMISSION

JOB NO: 21015

SHEET NUMBER  
**A3.01**





**3 LEFT ELEVATION**

Scale: 1/8" = 1'



**4 RIGHT ELEVATION**

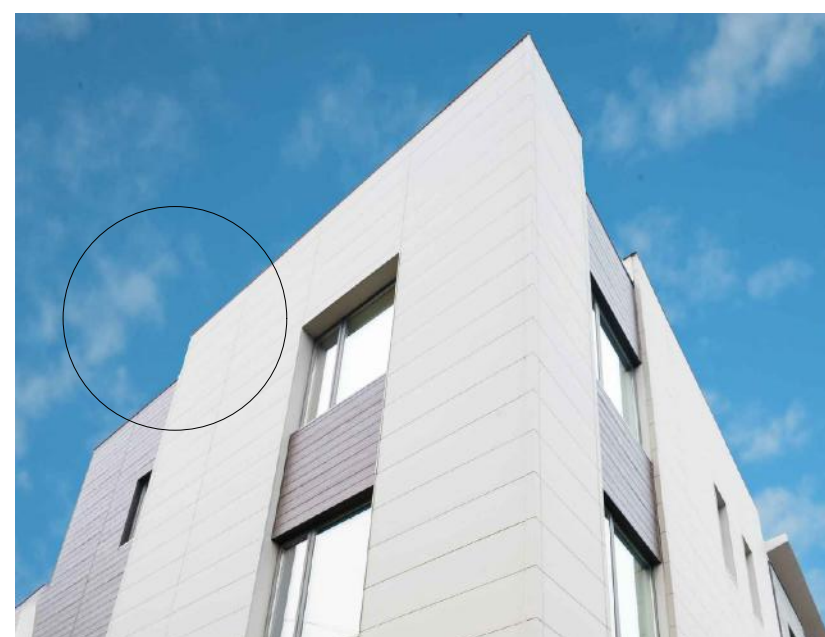
Scale: 1/8" = 1'

**EXTERIOR SIDING FINISHES KEY (AT UPPER LEVELS)**

BASIS OF DESIGN NICHHA PANEL RAIN SCREEN SYSTEMS:  
SMOOTH & RIBBED PANEL SYSTEMS  
(EXAMPLE PHOTOS ATTACHED)



NICHHA panel system



ribbed panel system



**O'SULLIVAN ARCHITECTS, INC.**

ARCHITECTURE • INTERIORS • PLANNING

606 MAIN STREET, SUITE 3001  
READING, MASSACHUSETTS 01867

Tel: (781) 439-6166 Fax: (781) 439-6170  
www.osullivanarchitects.com

These drawings and specifications were prepared for use at the location indicated. Publication and use is expressly limited to the identified location. Reuse or reproduction by any method, in whole or in part, is prohibited without the written permission of O'Sullivan Architects, Inc.  
© 2021 O'Sullivan Architects Inc.

25 Haven Street  
Reading, MA

Elevations



SCALE: As Noted

ISSUED / DRAWN BY

4/29/2022

© O'Sullivan Architects Inc.

REVISED / REVISED BY

10/24/2022 - REV SUBMISSION

11/28/2022 - REV 2 SUBMISSION

JOB NO: 21015

SHEET NUMBER

**A3.02**





1 VIEW 1 FROM HAVEN ST.  
Scale: N.T.S.



2 VIEW 2 FROM HAVEN ST.  
Scale: N.T.S.



O'SULLIVAN  
ARCHITECTS, INC.

ARCHITECTURE ■ INTERIORS ■ PLANNING

606 MAIN STREET, SUITE 3001  
READING, MASSACHUSETTS 01867

Tel: (781) 439-6166 Fax: (781) 439-6170  
www.osullivanarchitects.com

These drawings and specifications were prepared for use at the location indicated. Publication and use is expressly limited to the identified location. Reuse or reproduction by any method, in whole or in part, is prohibited without the written permission of O'Sullivan Architects, Inc.  
© 2021 O'Sullivan Architects, Inc.

25 Haven Street  
Reading, MA

Perspectives

SCALE: As Noted

ISSUED / DRAWN BY

4/29/2022

© O'Sullivan Architects, Inc.

REVISED / REVISED BY

10/24/2022 - REV SUBMISSION

11/28/2022 - REV 2 SUBMISSION

JOB NO: 21015

SHEET NUMBER

A3.10





3 VIEW 3 FROM GREEN ST. @ PUBLIC PATH  
Scale: N.T.S.



4 VIEW 4 FROM DEPOT  
Scale: N.T.S.



O'SULLIVAN  
ARCHITECTS, INC.

ARCHITECTURE ■ INTERIORS ■ PLANNING

606 MAIN STREET, SUITE 3001  
READING, MASSACHUSETTS 01867

Tel: (781) 439-6166 Fax: (781) 439-6170  
www.osullivanarchitects.com

These drawings and specifications were prepared for use at the location indicated. Publication and use is expressly limited to the identified location. Reuse or reproduction by any method, in whole or in part, is prohibited without the written permission of O'Sullivan Architects, Inc.  
© 2021 O'Sullivan Architects, Inc.

25 Haven Street  
Reading, MA

Perspectives

SCALE: As Noted

ISSUED / DRAWN BY

4/29/2022

© O'Sullivan Architects, Inc.

REVISED / REVISED BY

10/24/2022 - REV SUBMISSION

11/28/2022 - REV 2 SUBMISSION

JOB NO: 21015

SHEET NUMBER

A3.11





5 VIEW 5 WEST SIDE ELEVATION  
Scale: N.T.S.



6 VIEW 6 FROM HAVEN  
Scale: N.T.S.



O'SULLIVAN  
ARCHITECTS, INC.

ARCHITECTURE ■ INTERIORS ■ PLANNING

606 MAIN STREET, SUITE 3001  
READING, MASSACHUSETTS 01867

Tel: (781) 439-6166 Fax: (781) 439-6170  
www.osullivanarchitects.com

These drawings and specifications were prepared for use at the location indicated. Publication and use is expressly limited to the identified location. Reuse or reproduction by any method, in whole or in part, is prohibited without the written permission of O'Sullivan Architects, Inc.  
© 2021 O'Sullivan Architects, Inc.

25 Haven Street  
Reading, MA

Perspectives

SCALE: As Noted

ISSUED / DRAWN BY

4/29/2022

© O'Sullivan Architects, Inc.

REVISED / REVISED BY

10/24/2022 - REV SUBMISSION

11/28/2022 - REV 2 SUBMISSION

JOB NO: 21015

SHEET NUMBER

A3.12





O'SULLIVAN ARCHITECTS, INC.

ARCHITECTURE ■ INTERIORS ■ PLANNING

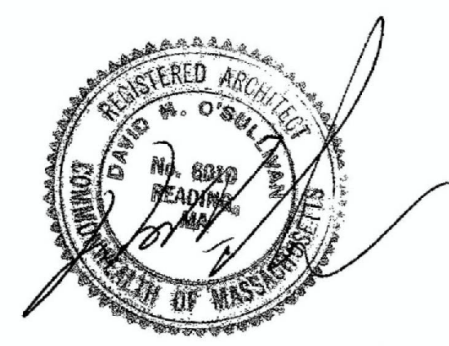
606 MAIN STREET, SUITE 3001  
READING, MASSACHUSETTS 01867

Tel: (781) 439-6166 Fax: (781) 439-6170  
www.osullivanarchitects.com

These drawings and specifications were prepared for use at the location indicated. Publication and use is expressly limited to the identified location. Reuse or reproduction by any method, in whole or in part, is prohibited without the written permission of O'Sullivan Architects, Inc.  
© 2021 O'Sullivan Architects Inc.

25 Haven Street  
Reading, MA

Sections



SCALE: As Noted

ISSUED / DRAWN BY  
4/29/2022

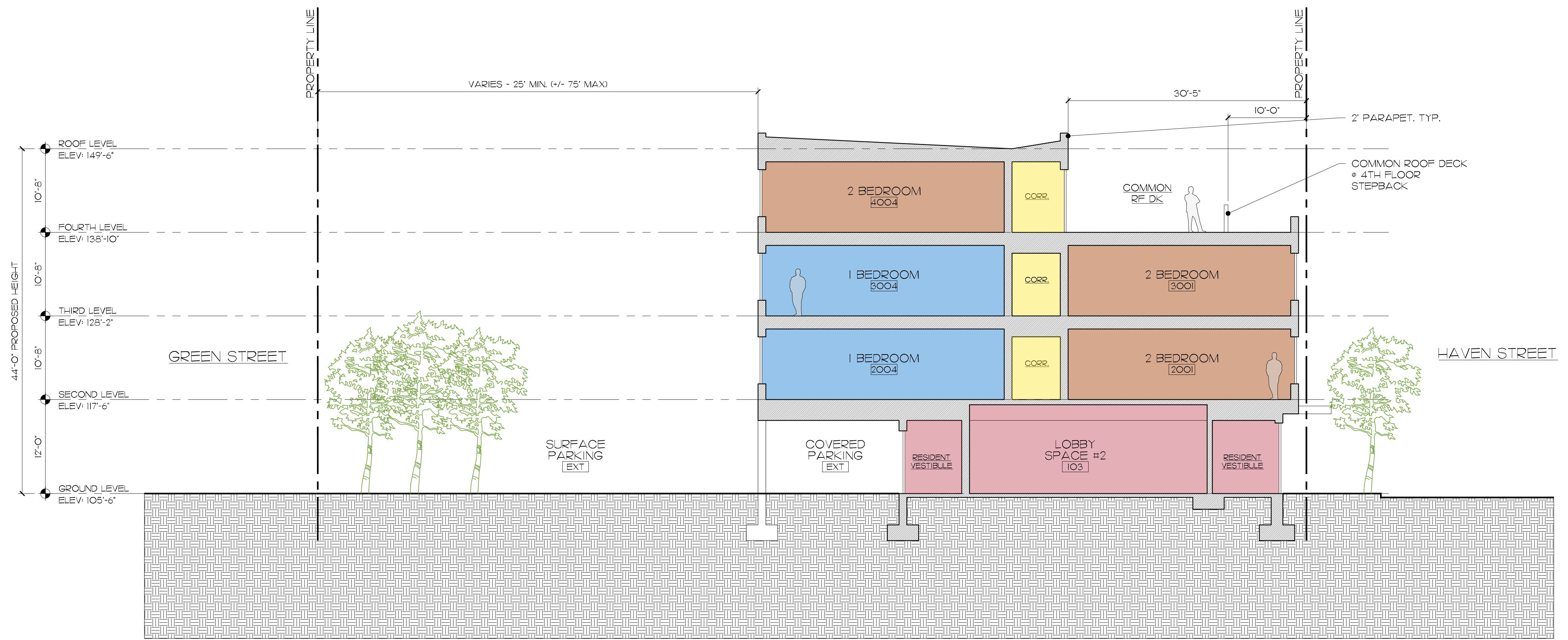
REVISED / REVISED BY  
10/24/2022 - REV SUBMISSION  
11/28/2022 - REV 2 SUBMISSION

JOB NO: 21015

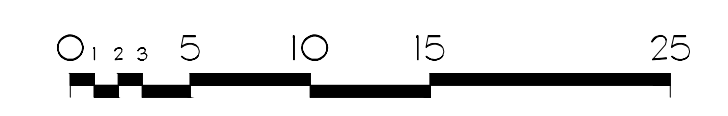
SHEET NUMBER  
**A4.01**



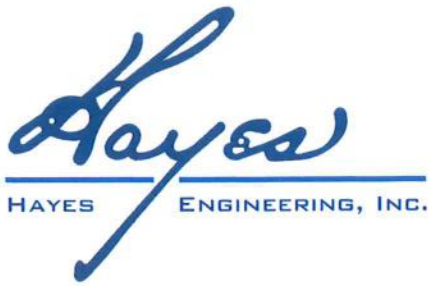
**B** SECTION  
Scale: 1/8" = 1'



**A** SECTION  
Scale: 1/8" = 1'







# Stormwater Management Report

## 25 Haven Street Mixed-Use Development Reading, Massachusetts

November 22, 2022



Prepared for: 25 Haven Street, LLC  
25 Haven Street, Reading, MA

Prepared by: Hayes Engineering, Inc.  
603 Salem Street, Wakefield, MA

Hayes Engineering, Inc.  
Civil Engineers & Land Surveyors  
603 Salem Street, Wakefield, MA 01880  
(781) 246-2800 phone, (781) 246-7596 fax



# Stormwater Management Report

- Introduction & Background
- Compliance with Massachusetts Stormwater Standards
  - Standard 1: No New Untreated Discharges
  - Standard 2: Peak Rate Attenuation
  - Standard 3: Recharge
  - Standard 4: Water Quality
  - Standard 5: LUHPPLs
  - Standard 6: Critical Areas
  - Standard 7: Redevelopment Projects
  - Standard 8: Construction Period Pollution Plan
  - Standard 9: Operation and Maintenance Plan
  - Standard 10: Prohibition of Illicit Discharges
- Construction Pollution Prevention Plan
- Long-term Pollution Prevention Plan
- Appendix A: HydroCAD Drainage Calculations
- Appendix B: NRCS Soil Mapping and Data
- Watershed Maps



## Introduction and Background

The Site consists of approximately 18,935 square feet in land area in Reading, Massachusetts abutting Haven Street to the North, Green Street to the South and commercial business properties to the east and west. The site is currently developed and consists of a large parking area to the east and an approximately 7,953-sf building to the west. The parcel is almost wholly impervious and drains via surface runoff and a drainage system to the existing drainage system within High Street. Site topography generally slopes to the south towards Green Street, with a small portion sloping towards a catch basin on Haven Street that then flows to a Green Streets catch basin and out to the High Street drainage system.

The Project consists of the construction of a proposed 4-story, 12-unit residential multi-family building with two commercial spaces at ground level, as well as associated parking and utilities. The Project, as proposed, represents a redevelopment project and results in a net of 1,200-sf. of impervious surface.

This Storm Water Management Report evaluates the Project's hydrologic impacts and compliance with the Massachusetts Stormwater Management Standards as identified in the Massachusetts Stormwater Handbook (MSH) for the proposed improvements described above.

### Methodology

This study evaluates the Site hydrology in accordance with the National Resource Conservation Service (NRCS), formerly the Soil Conservation Service (SCS), methodology outlined in Technical Release 55 and Technical Release 20. Precipitation volumes are summarized in Table 1, below:

**Table 1: Design Storm Events**

*NOAA, Atlas 14, Volume 10, Version 3 – Reading, Massachusetts*

---

| <b>Recurrence Interval</b> | <b>Precipitation</b> |
|----------------------------|----------------------|
| 2-year, 24-hour            | 3.31-inches          |
| 10-year, 24-hour           | 5.22-inches          |
| 25-year, 24-hour           | 6.41-inches          |
| 100-year, 24-hour          | 8.24-inches          |

---

Modelling was performed using HydroCAD™ software and model parameters based on pre- and post-development hydrologic soil group, land cover conditions, and topography.



## Analysis

The selected design point of comparison for this analysis is the catch basin on Green Street that leads to the drainage system on High Street. Peak rates of runoff were evaluated in both the existing and proposed conditions using the cumulative rainfall depths for the 2, 10, 25 and 100-year, Type III, 24-hour storm events as identified above. As previously stated, the Project is a redevelopment project and reduces impervious surfaces at the Site.

## Compliance with Stormwater Management Standards

### Standard 1: No New Untreated Discharges

The Project, as proposed, will not create new untreated discharges of stormwater runoff. The project reduces impervious surface coverage at the site and collects the entire parking lot with a deep sump catch basin equipped with a ADS Barracuda Separator to enhance stormwater treatment.

### Standard 2: Peak Rate Attenuation

The Project, as proposed, does not increase peak rate of runoff in 2, 10, 25 and 100-year, Type III, 24-hour storm events to the selected design point. HydroCAD™ calculations accompany this report as Appendix A. The following table summarizes the calculated peak rate of runoff to the Design Point for the project in the existing and proposed conditions:

**Table 2: Peak Rate of Runoff**

*Tributary to Broadway Street*

| <b>Storm Event</b>                           | <b>Existing Condition<br/>Peak Rate of Discharge</b> | <b>Proposed Condition<br/>Peak Rate of Discharge</b> |
|--|--|--|
| 2-year, 24-hour, Type III<br>(3.31-inches)   | 1.14 cfs   | 0.38 cfs   |
| 10-year, 24-hour, Type III<br>(5.22-inches)  | 1.97 cfs   | 0.74 cfs   |
| 25-year, 24-hour, Type III<br>(6.41-inches)  | 2.49 cfs   | 0.99 cfs   |
| 100-year, 24-hour, Type III<br>(8.24-inches) | 3.28 cfs   | 1.39 cfs   |

### Standard 3: Recharge

The Natural Resource Conservation Service (NRCS) does not classify the soil at the site, other than noting that it is "Urban Land." However, adjacent soils are representative of Hydrologic Soil Group (HSG) "A" which was selected for this analysis (see Appendix A – Soil Maps). The site is a redevelopment project and subject to this standard to the maximum extent practicable. The reduction in impervious surfaces will decrease the volume of surficial runoff, resulting in increased infiltration from the site. Runoff volumes in the existing and proposed conditions are summarized in Table 3, below:



**Table 3: Volume of Runoff***Tributary to Broadway Street*

| <b>Storm Event</b>                           | <b>Existing Condition<br/>Runoff Volume</b> | <b>Proposed Condition<br/>Runoff Volume</b> |
|--|---|---|
| 2-year, 24-hour, Type III<br>(3.31-inches)   | 3,693 cf                                    | 1,419 cf                                    |
| 10-year, 24-hour, Type III<br>(5.22-inches)  | 6,568 cf                                    | 2,647 cf                                    |
| 25-year, 24-hour, Type III<br>(6.41-inches)  | 8,395 cf                                    | 3,483 cf                                    |
| 100-year, 24-hour, Type III<br>(8.24-inches) | 11,230 cf                                   | 5,182 cf                                    |

**Standard 4: Water Quality**

The Project is classified as a redevelopment project under the MSH and is required to meet the water quality standard to the maximum extent practicable. Stormwater runoff from the site is collected by deep-sump basin with an ADS Barracuda S4 swirl particle separator sized to provide a presumptive TSS removal rate of 80-percent to improve stormwater quality prior to discharge. Sizing calculations for the swirl particle separator accompany this report as Appendix C.

**Standard 5: Land Uses with Higher Potential Pollutant Loads (LUHPPLs)**

The Project is not associated with a LUHPPL. Standard 5 is not applicable to this project.

**Standard 6: Critical Areas**

The Site is not tributary to an Outstanding Resource Water (ORW) or other Critical Areas.

**Standard 7: Projects Subject to the Standards only to the maximum extent practicable**

The Project is a redevelopment and has been designed to meet the applicable Standards to the maximum extent practicable.

**Standard 8: Construction Period Pollution Prevention & Sedimentation Control**

A construction period pollution prevention plan accompanies this report. The Project is also subject to a NPDES Construction General Permit. A SWPPP will be submitted prior to the commencement of construction activities.



Standard 9: Operations and Maintenance Plan

A post-construction Operation and Maintenance Plan (Long-Term Pollution Prevention Plan) accompanies this report.

Standard 10: Prohibition of Illicit Discharges

The Long-Term Pollution Prevention Plan includes measures to prevent illicit discharges. An illicit discharge statement is also included in the plan.



## Construction Period Pollution Prevention Plan

**Project Name:** Mixed-Use Development  
25 Haven Street  
Reading, Massachusetts

**Owner's Name:** 25 Haven Street, LLC

**Applicant's Name:** 25 Haven Street, LLC

**Party Responsible for Maintenance:** 25 Haven Street, LLC

### **Project Description:**

The Applicant seeks to construct a 4-story, 12-unit multi-family residential building with 2 ground level commercial spaces, and associated parking and utilities.

### **Erosion and Sedimentation Control Measures During Construction Activities:**

#### **Storm Drain Inlet Protection**

A temporary storm inlet protection filter will be placed in all catch basin units. The purpose of the filter is to prevent the inflow of sediment into the closed drainage system(s). The filters shall remain in place until a permanent vegetative cover is established and the transport of sediment is no longer visibly apparent. The filter shall be inspected and maintained on a weekly basis and after significant storm events. Significant storm events are those having greater than one-quarter (1/4) inch of precipitation in a 24-hour period.

#### **Surface Stabilization**

The surface of all disturbed areas shall be stabilized during and after construction. Temporary measures shall be taken during construction to prevent erosion and sedimentation. No construction sediment shall be allowed to enter infiltration areas. All disturbed slopes shall be stabilized with a permanent vegetative cover. Some or all of the following measures can be used on the Project as conditions may warrant:

- Temporary Seeding
- Temporary Mulching
- Placement of Hay
- Placement of Geo-Synthetic Fabrics
- Hydroseeding
- Permanent Seeding
- Placement of Sod



### **Surface and Subsurface Infiltration Facilities**

No construction period runoff should be directed toward infiltration facilities. The performance of these facilities shall be checked weekly and after significant storm events throughout construction.



## INSPECTION SCHEDULE and EVALUATION CHECKLIST

To be completed weekly and within 24-hours of significant rainfall events (greater than 1/4-inches in a 24-hour period).

Inspector's Name: \_\_\_\_\_ Date: \_\_\_\_\_

Qualifications: \_\_\_\_\_

Days since last rainfall: \_\_\_\_\_ days      Amount of last rainfall: \_\_\_\_\_ inches

### Stabilization Measures

| Sub-Catchment | Date of Last Disturbance | Date of Next Disturbance | Stabilized (Yes or No) | Stabilized With: | Condition |
|---------------|--------------------------|--------------------------|------------------------|------------------|-----------|
|               |                          |                          |                        |                  |           |
|               |                          |                          |                        |                  |           |
|               |                          |                          |                        |                  |           |

**Stabilization required:** \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

To be performed by: \_\_\_\_\_ on or before: \_\_\_\_\_



## PERIMETER CONTROLS

Date of Inspection: \_\_\_\_\_

### Stabilized Construction Entrance:

| <b>Location</b> | <b>Does much sediment get tracked onto roadway?<br/>(Yes or No)</b> | <b>Is gravel clean or full of sediment?</b> | <b>Is all traffic using the entrance to access/exit the site?<br/>(Yes or No)</b> | <b>Is the culvert beneath the entrance working?<br/>(Yes or No)</b> |
|-----------------|---|---|---|---|
|                 |   |   |   |   |

Maintenance required for stabilized construction entrance: \_\_\_\_\_

\_\_\_\_\_

To be performed by: \_\_\_\_\_ on or before: \_\_\_\_\_







## Long-Term Pollution Prevention Plan

**Project Name:** Mixed-Use Development  
25 Haven Street  
Reading, Massachusetts

**Owner's Name:** 25 Haven Street, LLC

**Applicant's Name:** 25 Haven Street, LLC

**Party Responsible for Maintenance:** 25 Haven Street, LLC

### **Project Description:**

The Applicant seeks to construct a 4-story, 12-unit multi-family residential building with 2 ground level commercial spaces, and associated parking and utilities.

**Acknowledgement:** \_\_\_\_\_ **Date:** \_\_\_\_\_

### **Post-Construction Inspection and Maintenance Measures:**

#### **Erosion Control**

Sedimentation caused from erosion of soils can adversely affect the performance of the storm water management system. The site should be inspected annually for areas that are barren and/or showing signs of erosion and should be stabilized through immediate re-vegetation.

#### **Debris and Litter Removal**

Litter and other debris may collect in storm water best management practices (BMPs), potentially causing clogging of facilities. All debris and litter shall be removed as necessary, at a minimum of four (4) times per year in the spring, summer, fall and winter.

#### **Deep Sump Catch Basin**

*In accordance with Volume 2, Chapter 2 of the MassDEP Storm Water Handbook as summarized below:*

Inspect or clean deep sump catch basins at least four (4) times per year and at the end of the foliage and snow-removal seasons. Sediments must also be removed four (4) times per year or whenever the depth of deposits is greater than or equal to one-half (1/2) the depth from the invert of the lowest pipe in the basin to the bottom of the basin (the sump). If handling runoff from land uses with higher potential pollutant loads (LUHPPLs) or discharging near or to a critical area, more frequent cleaning may be necessary.

Deep sump catch basins should be cleaned with vacuum trucks only. Clamshell buckets shall not be used to clean hooded catch basins. Vacuum trucks remove more sediment and supernatant, and are less likely to snap the hood within the deep sump basin.



Always consider the safety of the staff cleaning deep sump catch basins. Cleaning a deep sump catch basin within a road with active traffic or even within a parking lot is dangerous, and a police detail may be necessary to safeguard workers.

Although catch basin debris often contains concentrations of oil and hazardous materials such as petroleum hydrocarbons and metals, MassDEP classifies them as solid waste. Unless there is evidence that they have been contaminated by a spill or other means, MassDEP does not routinely require catch basin cleanings to be tested before disposal. Contaminated catch basin cleanings must be evaluated in accordance with the Hazardous Waste Regulations, 310 CMR 30.000, and handled as hazardous waste.

In the absence of evidence of contamination, catch basin cleanings may be taken to a landfill or other facility permitted by MassDEP to accept solid waste, without any prior approval by MassDEP. However, some landfills require catch basin cleanings to be tested before they are accepted.

With prior MassDEP approval, catch basin cleanings may be used as grading and shaping materials at landfills undergoing closure (see Revised Guidelines for Determining Closure Activities at Inactive Unlined Landfill Sites) or as daily cover at active landfills. MassDEP also encourages the beneficial reuse of catch basin cleanings whenever possible. A Beneficial Reuse Determination is required for such use.

MassDEP regulations prohibit landfills from accepting materials that contain free-draining liquids. One way to remove liquids is to use a hydraulic lift truck during cleaning operations so that the material can be decanted at the site. After loading material from several catch basins into a truck, elevate the truck so that any free-draining liquid can flow back into the structure. If there is no free water in the truck, the material may be deemed to be sufficiently dry. Otherwise the catch basin cleanings must undergo a Paint Filter Liquids Test. Go to [www.Mass.gov/dep/recycle/laws/cafacts.doc](http://www.Mass.gov/dep/recycle/laws/cafacts.doc) for information on all of the MassDEP requirements pertaining to the disposal of catch basin cleanings.

### **ADS Barracuda S4 Swirl Particle Separator<sup>1</sup>**

One of the advantages of the Barracuda is the ease of maintenance. Like any system that collects pollutants, the Barracuda must be maintained for continued effectiveness. Maintenance is a simple procedure performed using a vacuum truck or similar equipment. The systems were designed to minimize the volume of water removed during routine maintenance, reducing disposal costs.

Contractors can access the pollutants stored in the manhole through the manhole cover. This allows them to gain vacuum hose access to the bottom of the manhole to remove sediment and trash. There is no confined space entry necessary for inspection or maintenance.

---

<sup>1</sup> Taken from ADS Barracuda Maintenance Guide, July 2017



The entire maintenance procedure typically takes from 2 to 4 hours, depending on the size of the system, the captured material, and the capacity of the vacuum truck.

Local regulations may apply to the maintenance procedure. Safe and legal disposal of pollutants is the responsibility of the maintenance contractor. Maintenance should be performed only by a qualified contractor.

### Inspection and Cleaning Cycle

Periodic inspection is needed to determine the need for and frequency of maintenance. You should begin inspecting as soon as construction is complete and thereafter on an annual basis. Typically, the system needs to be cleaned every 1-3 years.

Excessive oils, fuels or sediments may reduce the maintenance cycle. Periodic inspection is important.

### Determining When to Clean

To determine the sediment depth, the maintenance contractor should lower a stadia rod into the manhole until it contacts the top of the captured sediment and mark that spot on the rod. Then push the probe through to the bottom of the sump and mark that spot to determine sediment depth.

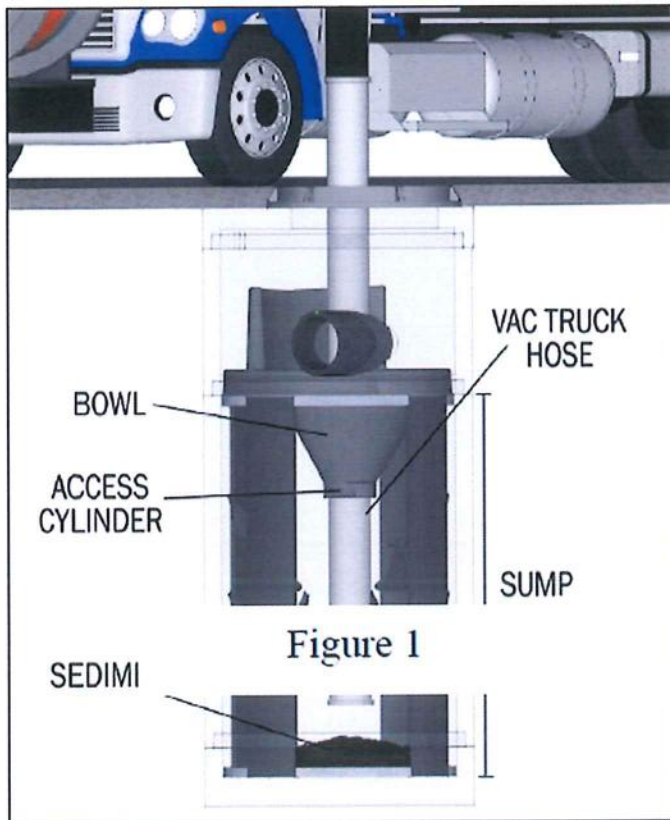
Maintenance should occur when the sediment has reached the levels indicated in the Storage Capacity Chart.

| Model | Manhole Diameter | Treatment Chamber Capacity | Standard Sediment Capacity (20" depth) | NJDEP Sediment Capacity (50% of standard depth) |
|-------|------------------|----------------------------|--|---|
| S3    | 36"              | 212 gallons                | 0.44 cubic yards                       | 0.22 cubic yards                                |
| S4    | 48"              | 564 gallons                | 0.78 cubic yards                       | 0.39 cubic yards                                |
| S5    | 60"              | 881 gallons                | 1.21 cubic yards                       | 0.61 cubic yards                                |
| S6    | 72"              | 1269 gallons               | 1.75 cubic yards                       | 0.88 cubic yards                                |
| S8    | 96"              | 3835 gallons               | 3.10 cubic yards                       | 1.55 cubic yards                                |
| S10   | 120"             | 7496 gallons               | 4.85 cubic yards                       | 2.43 cubic yards                                |



### Maintenance Instructions

1. Remove the manhole cover to provide access to the pollutant storage. Pollutants are stored in the sump, below the bowl assembly visible from the surface. You'll access this area through the 10" diameter access cylinder.
2. Use a vacuum truck or other similar equipment to remove all water, debris, oils and sediment. See figure 1.
3. Use a high pressure hose to clean the manhole of all the remaining sediment and debris. Then, use the vacuum truck to remove the water.
4. Fill the cleaned manhole with water until the level reaches the invert of the outlet pipe.
5. Replace the manhole cover.
6. Dispose of the polluted water, oils, sediment, and trash at an approved facility.



### **Good Housekeeping Practices:**

#### **Provisions for storing paints, cleaners, automotive waste and other potentially hazardous household waste products inside or under cover:**

- All materials stored on-site shall be in a neat, orderly manner in their appropriate containers with original manufacturer's label(s);
- Only store enough material as needed; whenever possible, all of a product shall be used prior to disposing of container;



- Manufacturer, federal, state and local recommendations for proper use and disposal shall be followed.

#### **Vehicle Washing Controls:**

- Use commercial car washes whenever possible. Car washes treat and/or recycle wash water;
- Cars shall be washed on gravel, grass or other permeable surfaces to allow filtration to occur;
- Use biodegradable soaps only;
- Use hose nozzles that automatically turn off when unattended.

#### **Routine Inspection and Maintenance of Storm Water BMPs**

- Previously addressed.

#### **Spill Prevention and Response Plans**

- Spill control practices shall be in conformance with the guidelines set forth in the National Pollutant Discharge Elimination System (NPDES) Storm Water Pollution Prevention Plan (SWPPP).

#### **Maintenance of Lawns, Gardens and Other Landscaped Areas:**

- Grass shall not be cut shorter than two (2) to three (3) inches and mulch clipping should be left on lawns as a natural fertilizer;
- Use low volume water approaches for irrigation such as drip-type or sprinkler systems. Water plants only when needed to enhance root growth and avoid runoff problems;
- Mulch shall be used wherever practicable. Mulch helps retain water and prevents erosion.

#### **Storage and Use of Fertilizers, Herbicides and Pesticides:**

- Fertilizers shall be applied in the minimum amounts recommended by the manufacturer. Once applied, fertilizer shall be worked into the soil to limit exposure to storm water. Storage will be in covered areas only. Contents of partially used bags shall be transferred into sealable plastic containers to avoid spills;
- Do not fertilize before or during rain events;
- Consider the use of organic fertilizers;
- Pesticides shall be applied only when necessary and only in the minimum amounts recommended by the manufacturer.

#### **Pet Waste Management**

- Scoop up and seal pet waste in plastic bags. Dispose of in garbage.

#### **Solid Waste Management**

- All solid waste shall be disposed of or recycled in accordance with all federal, state and local regulations.

#### **List of Emergency Contacts for Plan Implementation**

To be determined by Owner.



## **Illicit Discharges**

As required by Standard 10 of the Massachusetts Stormwater Standards, I, the undersigned, being the authorized owner/responsible party of the above referenced property do hereby certify that no illicit discharges exist on the site and that the stormwater management system, as shown on the above referenced plan, does not contain or permit any illicit discharges to enter the stormwater management system. Furthermore, discharges from interior building drains or plumbing within the buildings are prohibited.

Illicit discharges do not include discharges from the following activities or facilities: firefighting, water line flushing, landscape irrigation, uncontaminated groundwater, potable water sources, foundation drains, air conditioning condensation, footing drains, individual resident car washing, flows from riparian habitats and wetlands, dechlorinated water from swimming pools, water used for street washing and water used to clean residential buildings without detergents.

The pollution prevention plan measures in this project to prevent illicit discharges to the stormwater management system, include wastewater discharges and discharges of stormwater contaminated by contact with process wastes, raw materials, toxic pollutants, hazardous substances, oil, or grease, include:

1. Identifying the responsible personnel for the implementation of an effective Illicit Discharge Detection and Elimination [IDDE] program.
2. Identify potential sources of Illicit Discharges.
3. Implement the Spill Prevention and Control Plan contained in the property Stormwater Pollution Prevention Plan [SWPPP].

Further, I certify that the stormwater management system as shown on the referenced plan will be maintained in accordance with the conditions of the Long-Term Pollution Prevention Plan.

---

Signature

---

Date



**POST-CONSTRUCTION  
OPERATION AND MAINTENANCE LOG**

Inspector's Name: \_\_\_\_\_ Date: \_\_\_\_\_

Qualifications: \_\_\_\_\_

Inspection Type:     Routine                       Spill                       Other: \_\_\_\_\_

Post-Rainfall (Precipitation in Inches: \_\_\_\_\_)

| <b>BMP</b>                       | <b>Frequency</b>                 | <b>Date Last Performed</b> | <b>Comments</b> |
|----------------------------------|----------------------------------|----------------------------|-----------------|
| <b>Litter and Debris Removal</b> | After Significant Rain Events    |                            |                 |
| <b>Deep Sump Catch Basin</b>     | Inspect four (4) times per year  |                            |                 |
|                                  | Maintenance as necessary         |                            |                 |
| <b>Vegetated Areas</b>           | Inspect as necessary for erosion |                            |                 |

**Notes:** \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

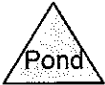
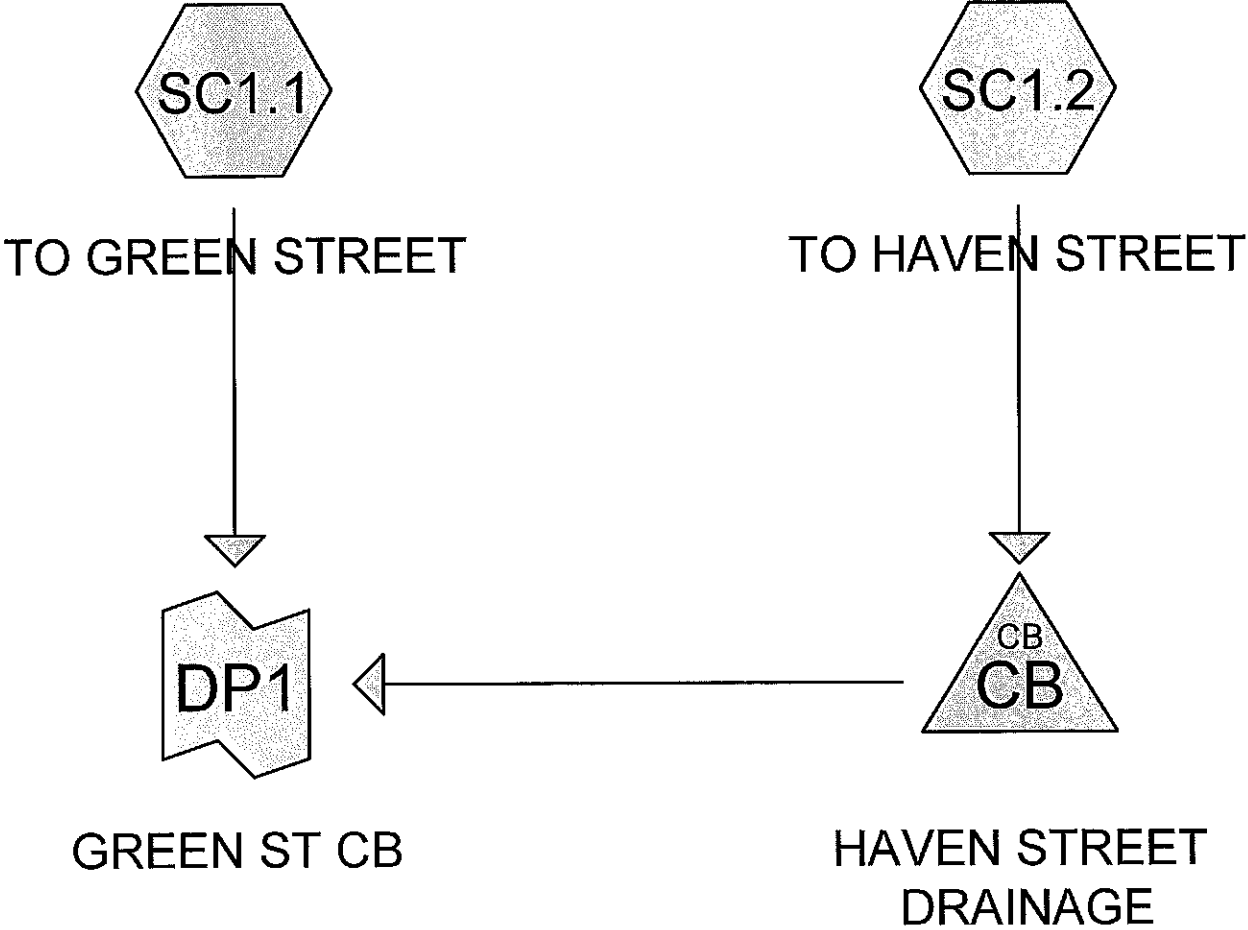


# Appendix A:

## HydroCAD™ Calculations



# EXISTING RUNOFF





**EXISTING REA0149**

Prepared by {enter your company name here}

HydroCAD® 10.10-6a s/n 03206 © 2020 HydroCAD Software Solutions LLC

Printed 11/23/2022

Page 2

**Rainfall Events Listing**

| Event# | Event Name | Storm Type     | Curve | Mode    | Duration (hours) | B/B | Depth (inches) | AMC |
|--------|------------|----------------|-------|---------|------------------|-----|----------------|-----|
| 1      | 2 Year     | Type III 24-hr |       | Default | 24.00            | 1   | 3.31           | 2   |
| 2      | 10 Year    | Type III 24-hr |       | Default | 24.00            | 1   | 5.22           | 2   |
| 3      | 25 Year    | Type III 24-hr |       | Default | 24.00            | 1   | 6.41           | 2   |
| 4      | 100 Year   | Type III 24-hr |       | Default | 24.00            | 1   | 8.24           | 2   |



**EXISTING REA0149**

Prepared by {enter your company name here}

HydroCAD® 10.10-6a s/n 03206 © 2020 HydroCAD Software Solutions LLC

Printed 11/23/2022

Page 3

**Area Listing (all nodes)**

| Area<br>(sq-ft) | CN        | Description<br>(subcatchment-numbers)        |
|-----------------|-----------|--|
| 2,301           | 39        | >75% Grass cover, Good, HSG A (SC1.1, SC1.2) |
| 913             | 98        | Concrete, HSG A (SC1.1, SC1.2)               |
| 15              | 68        | Crushed Stone, Poor, HSG A (SC1.1)           |
| 7,748           | 98        | Paved parking, HSG A (SC1.1, SC1.2)          |
| 7,953           | 98        | Unconnected roofs, HSG A (SC1.1)             |
| <b>18,930</b>   | <b>91</b> | <b>TOTAL AREA</b>                            |



**EXISTING REA0149**

Type III 24-hr 2 Year Rainfall=3.31"

Prepared by {enter your company name here}

Printed 11/23/2022

HydroCAD® 10.10-6a s/n 03206 © 2020 HydroCAD Software Solutions LLC

Page 4

Time span=0.00-40.00 hrs, dt=0.05 hrs, 801 points  
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment SC1.1: TO GREEN STREET** Runoff Area=16,070 sf 90.02% Impervious Runoff Depth=2.46"  
Tc=6.0 min CN=92 Runoff=1.01 cfs 3,288 cf

**Subcatchment SC1.2: TO HAVEN STREET** Runoff Area=2,860 sf 75.07% Impervious Runoff Depth=1.70"  
Tc=6.0 min CN=83 Runoff=0.13 cfs 405 cf

**Pond CB: HAVEN STREET DRAINAGE** Peak Elev=102.41' Inflow=0.13 cfs 405 cf  
6.0" Round Culvert n=0.013 L=156.0' S=0.0053 '/' Outflow=0.13 cfs 405 cf

**Link DP1: GREEN ST CB** Inflow=1.14 cfs 3,693 cf  
Primary=1.14 cfs 3,693 cf

**Total Runoff Area = 18,930 sf Runoff Volume = 3,693 cf Average Runoff Depth = 2.34"**  
**12.23% Pervious = 2,316 sf 87.77% Impervious = 16,614 sf**



**EXISTING REA0149**

Prepared by {enter your company name here}  
 HydroCAD® 10.10-6a s/n 03206 © 2020 HydroCAD Software Solutions LLC

Type III 24-hr 2 Year Rainfall=3.31"

Printed 11/23/2022

Page 5

**Summary for Subcatchment SC1.1: TO GREEN STREET**

Runoff = 1.01 cfs @ 12.09 hrs, Volume= 3,288 cf, Depth= 2.46"  
 Routed to Link DP1 : GREEN ST CB

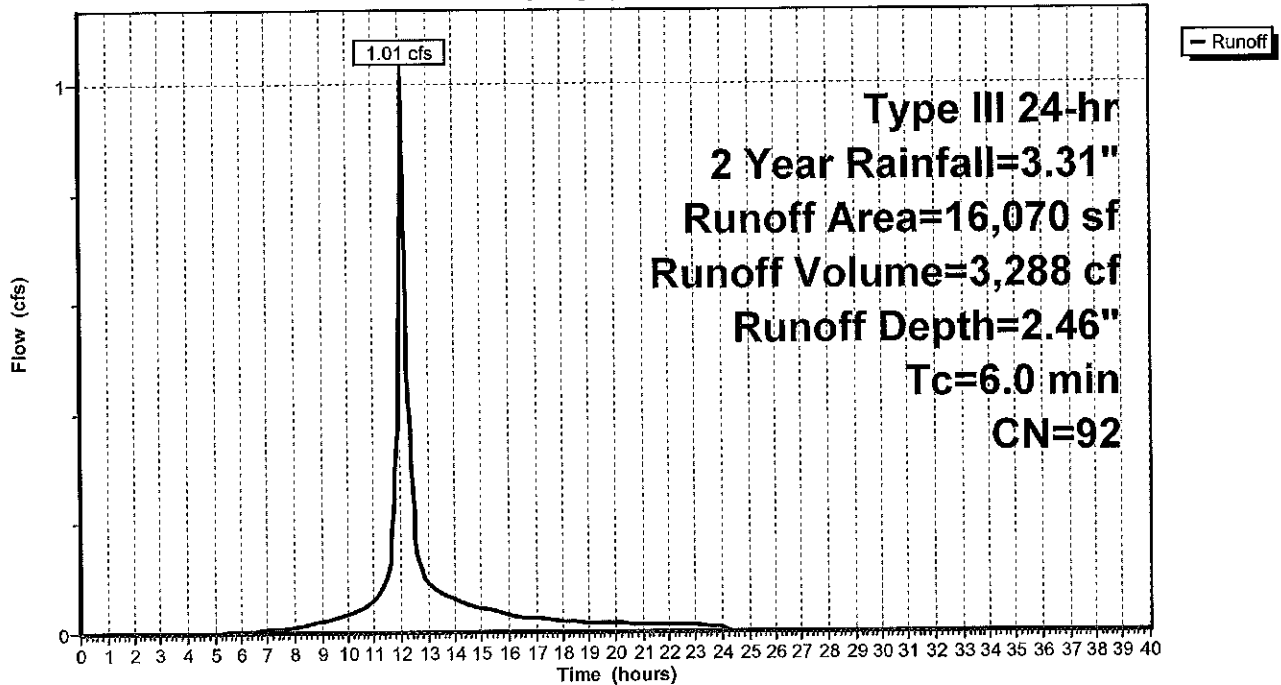
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 2 Year Rainfall=3.31"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 1,588     | 39 | >75% Grass cover, Good, HSG A |
| * 5,839   | 98 | Paved parking, HSG A          |
| * 675     | 98 | Concrete, HSG A               |
| * 15      | 68 | Crushed Stone, Poor, HSG A    |
| * 7,953   | 98 | Unconnected roofs, HSG A      |
| 16,070    | 92 | Weighted Average              |
| 1,603     |    | 9.98% Pervious Area           |
| 14,467    |    | 90.02% Impervious Area        |
| 7,953     |    | 54.97% Unconnected            |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 6.0      |               |               |                   |                | Direct Entry, |

**Subcatchment SC1.1: TO GREEN STREET**

Hydrograph





**EXISTING REA0149**

Prepared by {enter your company name here}  
 HydroCAD® 10.10-6a s/n 03206 © 2020 HydroCAD Software Solutions LLC

Type III 24-hr 2 Year Rainfall=3.31"

Printed 11/23/2022

Page 6

**Summary for Subcatchment SC1.2: TO HAVEN STREET**

Runoff = 0.13 cfs @ 12.09 hrs, Volume= 405 cf, Depth= 1.70"  
 Routed to Pond CB : HAVEN STREET DRAINAGE

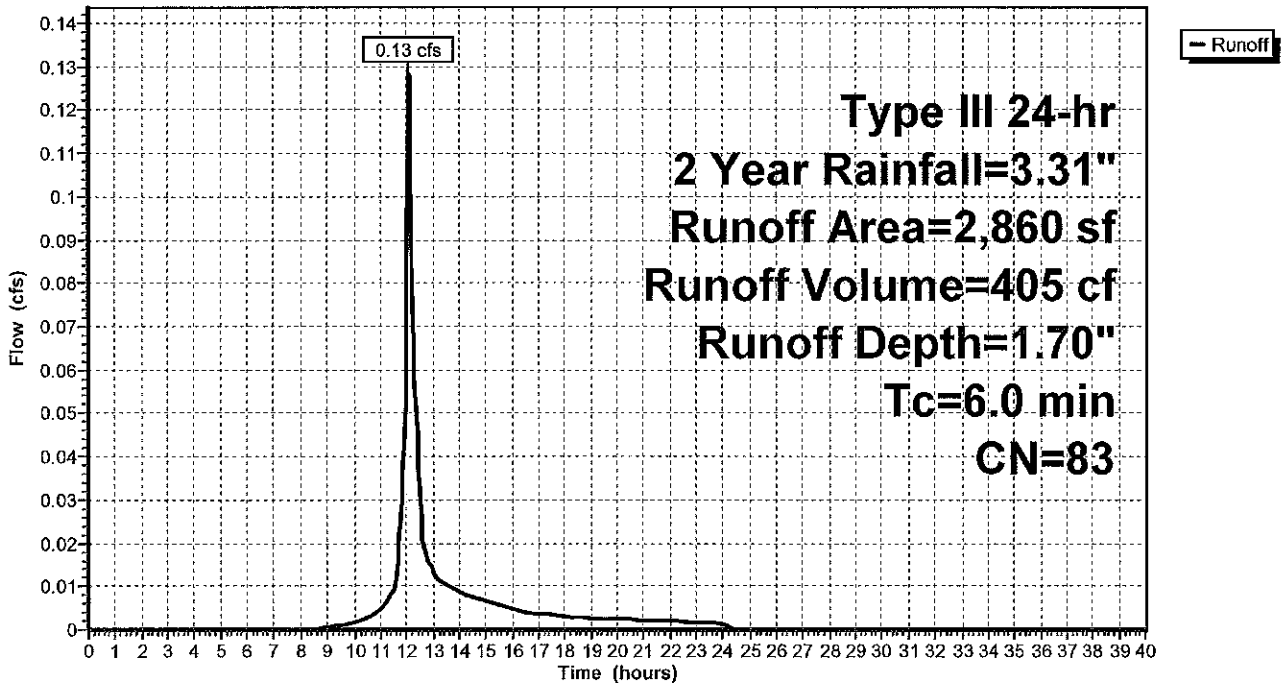
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 2 Year Rainfall=3.31"

|   | Area (sf) | CN | Description                   |
|---|-----------|----|-------------------------------|
|   | 713       | 39 | >75% Grass cover, Good, HSG A |
| * | 1,909     | 98 | Paved parking, HSG A          |
| * | 238       | 98 | Concrete, HSG A               |
|   | 2,860     | 83 | Weighted Average              |
|   | 713       |    | 24.93% Pervious Area          |
|   | 2,147     |    | 75.07% Impervious Area        |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 6.0      |               |               |                   |                | Direct Entry, |

**Subcatchment SC1.2: TO HAVEN STREET**

Hydrograph





**EXISTING REA0149**

Type III 24-hr 2 Year Rainfall=3.31"

Prepared by {enter your company name here}

Printed 11/23/2022

HydroCAD® 10.10-6a s/n 03206 © 2020 HydroCAD Software Solutions LLC

Page 7

**Summary for Pond CB: HAVEN STREET DRAINAGE**

Inflow Area = 2,860 sf, 75.07% Impervious, Inflow Depth = 1.70" for 2 Year event  
 Inflow = 0.13 cfs @ 12.09 hrs, Volume= 405 cf  
 Outflow = 0.13 cfs @ 12.09 hrs, Volume= 405 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 0.13 cfs @ 12.09 hrs, Volume= 405 cf  
 Routed to Link DP1 : GREEN ST CB

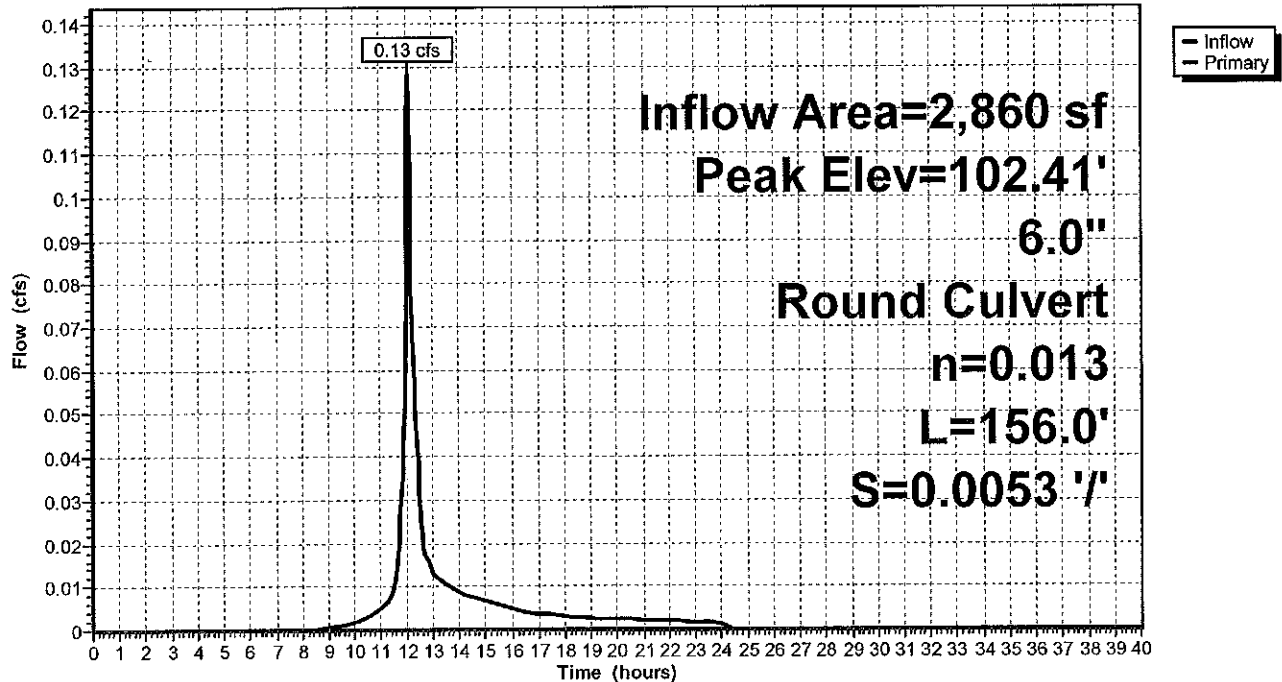
Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs  
 Peak Elev= 102.41' @ 12.09 hrs  
 Flood Elev= 104.55'

| Device | Routing | Invert  | Outlet Devices   |
|--------|---------|---------|--|
| #1     | Primary | 102.15' | <b>6.0" Round Culvert</b><br>L= 156.0' RCP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 102.15' / 101.33' S= 0.0053 '/ Cc= 0.900<br>n= 0.013, Flow Area= 0.20 sf |

Primary OutFlow Max=0.13 cfs @ 12.09 hrs HW=102.41' TW=0.00' (Dynamic Tailwater)  
 ↑1=Culvert (Barrel Controls 0.13 cfs @ 1.82 fps)

**Pond CB: HAVEN STREET DRAINAGE**

Hydrograph





**EXISTING REA0149**

Prepared by {enter your company name here}

HydroCAD® 10.10-6a s/n 03206 © 2020 HydroCAD Software Solutions LLC

Type III 24-hr 2 Year Rainfall=3.31"

Printed 11/23/2022

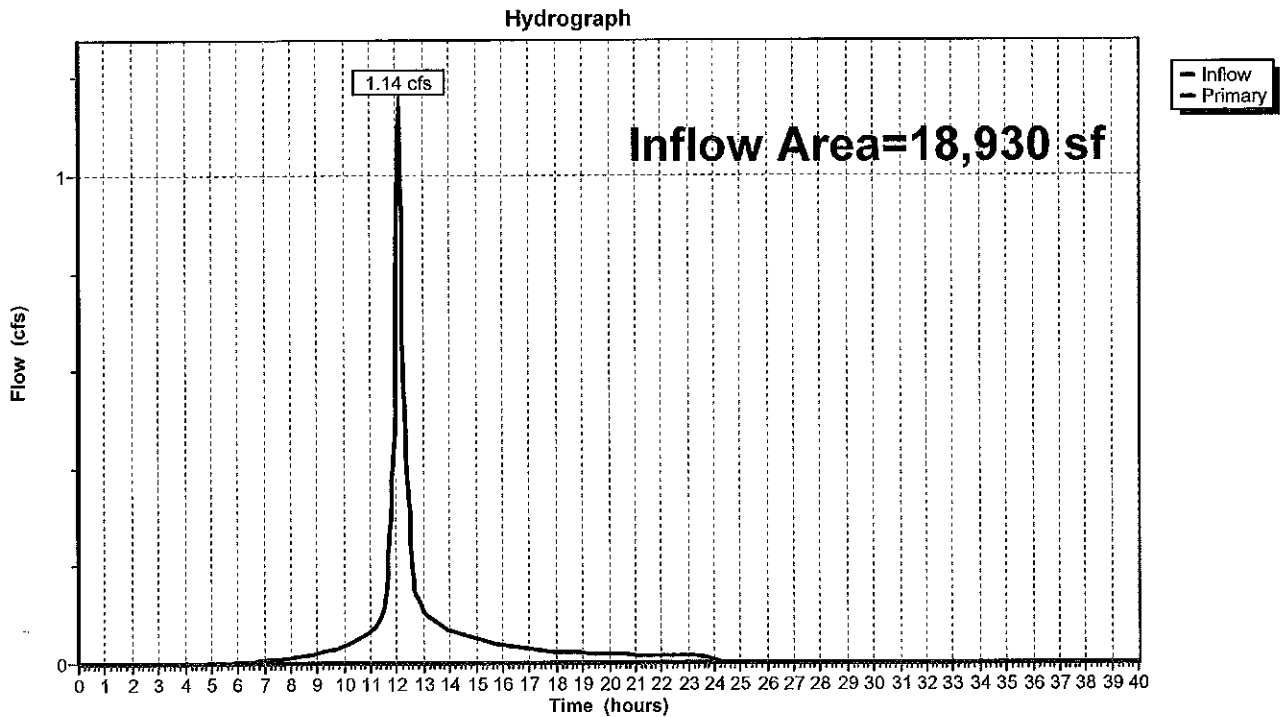
Page 8

**Summary for Link DP1: GREEN ST CB**

Inflow Area = 18,930 sf, 87.77% Impervious, Inflow Depth = 2.34" for 2 Year event  
Inflow = 1.14 cfs @ 12.09 hrs, Volume= 3,693 cf  
Primary = 1.14 cfs @ 12.09 hrs, Volume= 3,693 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs

**Link DP1: GREEN ST CB**





**EXISTING REA0149**

Type III 24-hr 10 Year Rainfall=5.22"

Prepared by {enter your company name here}

Printed 11/23/2022

HydroCAD® 10.10-6a s/n 03206 © 2020 HydroCAD Software Solutions LLC

Page 9

Time span=0.00-40.00 hrs, dt=0.05 hrs, 801 points  
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment SC1.1: TO GREEN STREET** Runoff Area=16,070 sf 90.02% Impervious Runoff Depth=4.30"  
Tc=6.0 min CN=92 Runoff=1.72 cfs 5,764 cf

**Subcatchment SC1.2: TO HAVEN STREET** Runoff Area=2,860 sf 75.07% Impervious Runoff Depth=3.37"  
Tc=6.0 min CN=83 Runoff=0.25 cfs 804 cf

**Pond CB: HAVEN STREET DRAINAGE** Peak Elev=102.53' Inflow=0.25 cfs 804 cf  
6.0" Round Culvert n=0.013 L=156.0' S=0.0053 '/' Outflow=0.25 cfs 804 cf

**Link DP1: GREEN ST CB** Inflow=1.97 cfs 6,568 cf  
Primary=1.97 cfs 6,568 cf

**Total Runoff Area = 18,930 sf Runoff Volume = 6,568 cf Average Runoff Depth = 4.16"**  
**12.23% Pervious = 2,316 sf 87.77% Impervious = 16,614 sf**



**EXISTING REA0149**

Type III 24-hr 10 Year Rainfall=5.22"

Prepared by {enter your company name here}

Printed 11/23/2022

HydroCAD® 10.10-6a s/n 03206 © 2020 HydroCAD Software Solutions LLC

Page 10

**Summary for Subcatchment SC1.1: TO GREEN STREET**

Runoff = 1.72 cfs @ 12.09 hrs, Volume= 5,764 cf, Depth= 4.30"  
 Routed to Link DP1 : GREEN ST CB

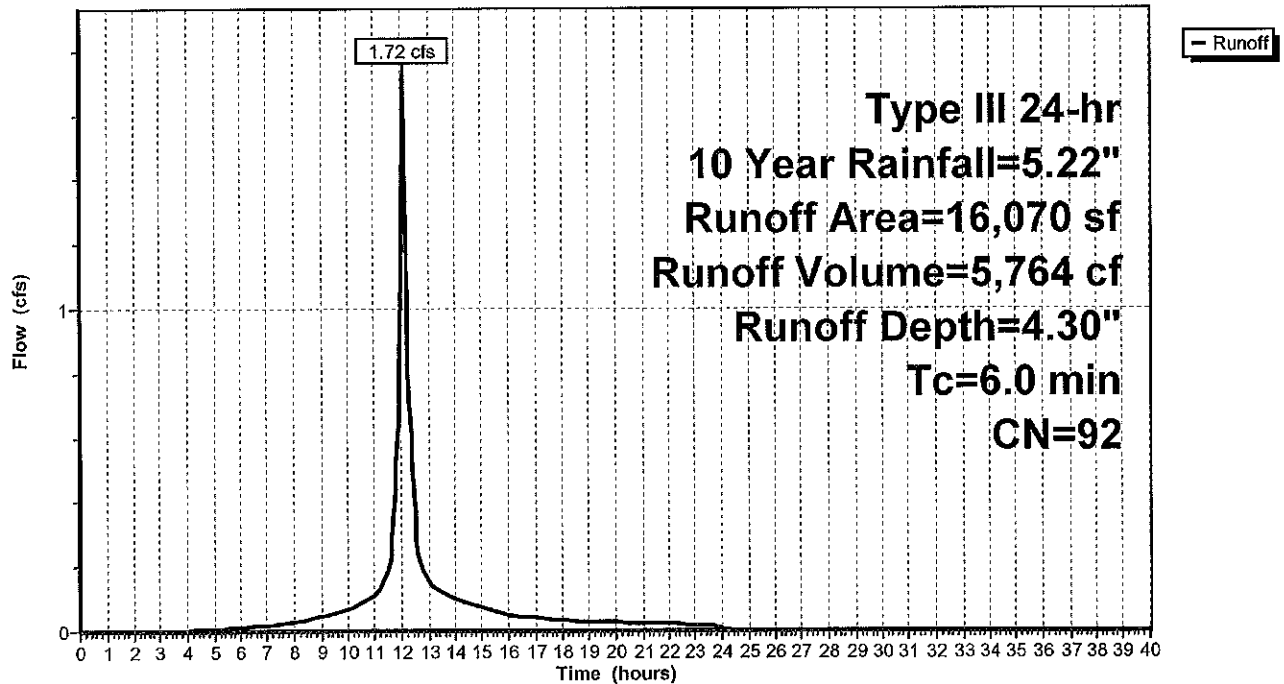
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 10 Year Rainfall=5.22"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 1,588     | 39 | >75% Grass cover, Good, HSG A |
| * 5,839   | 98 | Paved parking, HSG A          |
| * 675     | 98 | Concrete, HSG A               |
| * 15      | 68 | Crushed Stone, Poor, HSG A    |
| * 7,953   | 98 | Unconnected roofs, HSG A      |
| 16,070    | 92 | Weighted Average              |
| 1,603     |    | 9.98% Pervious Area           |
| 14,467    |    | 90.02% Impervious Area        |
| 7,953     |    | 54.97% Unconnected            |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 6.0      |               |               |                   |                | Direct Entry, |

**Subcatchment SC1.1: TO GREEN STREET**

Hydrograph





**EXISTING REA0149**

Prepared by {enter your company name here}  
 HydroCAD® 10.10-6a s/n 03206 © 2020 HydroCAD Software Solutions LLC

Type III 24-hr 10 Year Rainfall=5.22"

Printed 11/23/2022

Page 11

**Summary for Subcatchment SC1.2: TO HAVEN STREET**

Runoff = 0.25 cfs @ 12.09 hrs, Volume= 804 cf, Depth= 3.37"  
 Routed to Pond CB : HAVEN STREET DRAINAGE

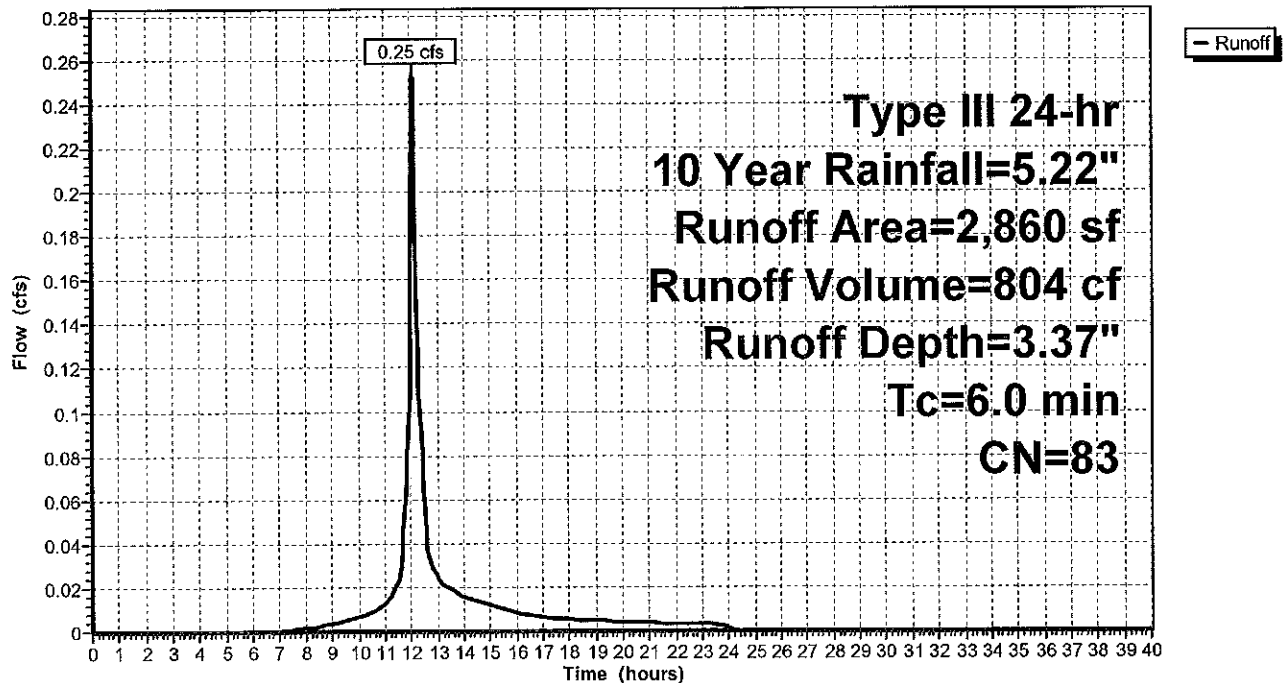
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 10 Year Rainfall=5.22"

|   | Area (sf) | CN | Description                   |
|---|-----------|----|-------------------------------|
|   | 713       | 39 | >75% Grass cover, Good, HSG A |
| * | 1,909     | 98 | Paved parking, HSG A          |
| * | 238       | 98 | Concrete, HSG A               |
|   | 2,860     | 83 | Weighted Average              |
|   | 713       |    | 24.93% Pervious Area          |
|   | 2,147     |    | 75.07% Impervious Area        |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 6.0      |               |               |                   |                | Direct Entry, |

**Subcatchment SC1.2: TO HAVEN STREET**

Hydrograph





**EXISTING REA0149**

Type III 24-hr 10 Year Rainfall=5.22"

Prepared by {enter your company name here}

Printed 11/23/2022

HydroCAD® 10.10-6a s/n 03206 © 2020 HydroCAD Software Solutions LLC

Page 12

**Summary for Pond CB: HAVEN STREET DRAINAGE**

Inflow Area = 2,860 sf, 75.07% Impervious, Inflow Depth = 3.37" for 10 Year event  
 Inflow = 0.25 cfs @ 12.09 hrs, Volume= 804 cf  
 Outflow = 0.25 cfs @ 12.09 hrs, Volume= 804 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 0.25 cfs @ 12.09 hrs, Volume= 804 cf  
 Routed to Link DP1 : GREEN ST CB

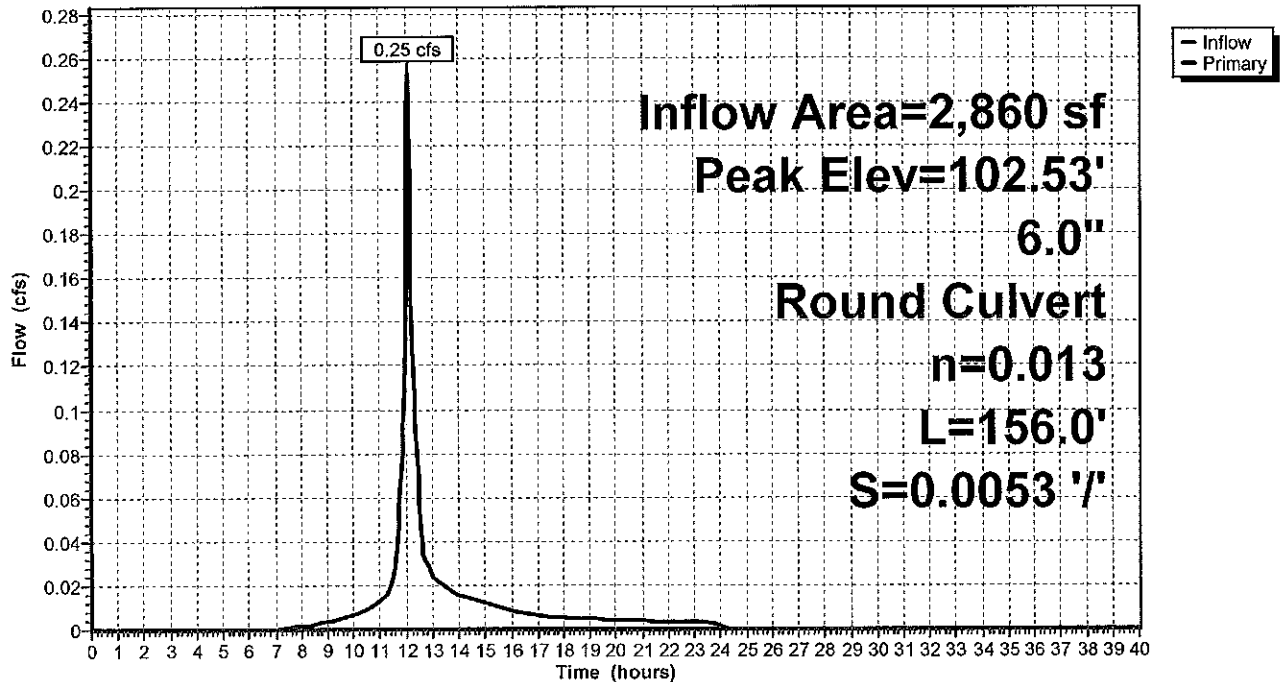
Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs  
 Peak Elev= 102.53' @ 12.09 hrs  
 Flood Elev= 104.55'

| Device | Routing | Invert  | Outlet Devices  |
|--------|---------|---------|---|
| #1     | Primary | 102.15' | <b>6.0" Round Culvert</b><br>L= 156.0' RCP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 102.15' / 101.33' S= 0.0053 '/' Cc= 0.900<br>n= 0.013, Flow Area= 0.20 sf |

Primary OutFlow Max=0.25 cfs @ 12.09 hrs HW=102.53' TW=0.00' (Dynamic Tailwater)  
 ←1=Culvert (Barrel Controls 0.25 cfs @ 2.16 fps)

**Pond CB: HAVEN STREET DRAINAGE**

Hydrograph





**EXISTING REA0149**

Type III 24-hr 10 Year Rainfall=5.22"

Prepared by {enter your company name here}

Printed 11/23/2022

HydroCAD® 10.10-6a s/n 03206 © 2020 HydroCAD Software Solutions LLC

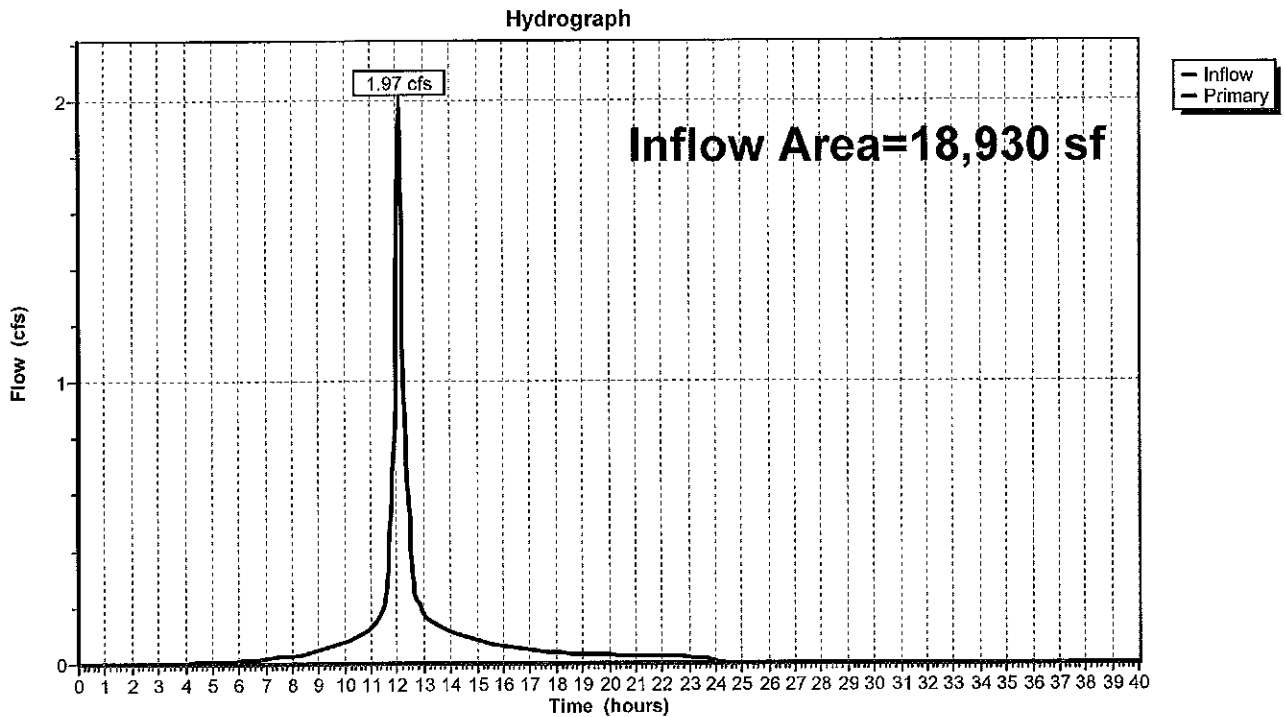
Page 13

**Summary for Link DP1: GREEN ST CB**

Inflow Area = 18,930 sf, 87.77% Impervious, Inflow Depth = 4.16" for 10 Year event  
Inflow = 1.97 cfs @ 12.09 hrs, Volume= 6,568 cf  
Primary = 1.97 cfs @ 12.09 hrs, Volume= 6,568 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs

**Link DP1: GREEN ST CB**



**EXISTING REA0149**

Type III 24-hr 25 Year Rainfall=6.41"

Prepared by {enter your company name here}

Printed 11/23/2022

HydroCAD® 10.10-6a s/n 03206 © 2020 HydroCAD Software Solutions LLC

Page 14

Time span=0.00-40.00 hrs, dt=0.05 hrs, 801 points  
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment SC1.1: TO GREEN STREET** Runoff Area=16,070 sf 90.02% Impervious Runoff Depth=5.47"  
Tc=6.0 min CN=92 Runoff=2.16 cfs 7,329 cf

**Subcatchment SC1.2: TO HAVEN STREET** Runoff Area=2,860 sf 75.07% Impervious Runoff Depth=4.47"  
Tc=6.0 min CN=83 Runoff=0.33 cfs 1,066 cf

**Pond CB: HAVEN STREET DRAINAGE** Peak Elev=102.61' Inflow=0.33 cfs 1,066 cf  
6.0" Round Culvert n=0.013 L=156.0' S=0.0053 '/' Outflow=0.33 cfs 1,066 cf

**Link DP1: GREEN ST CB** Inflow=2.49 cfs 8,395 cf  
Primary=2.49 cfs 8,395 cf

**Total Runoff Area = 18,930 sf Runoff Volume = 8,395 cf Average Runoff Depth = 5.32"**  
**12.23% Pervious = 2,316 sf 87.77% Impervious = 16,614 sf**



**EXISTING REA0149**

Type III 24-hr 25 Year Rainfall=6.41"

Prepared by {enter your company name here}

Printed 11/23/2022

HydroCAD® 10.10-6a s/n 03206 © 2020 HydroCAD Software Solutions LLC

Page 15

**Summary for Subcatchment SC1.1: TO GREEN STREET**

Runoff = 2.16 cfs @ 12.09 hrs, Volume= 7,329 cf, Depth= 5.47"  
 Routed to Link DP1 : GREEN ST CB

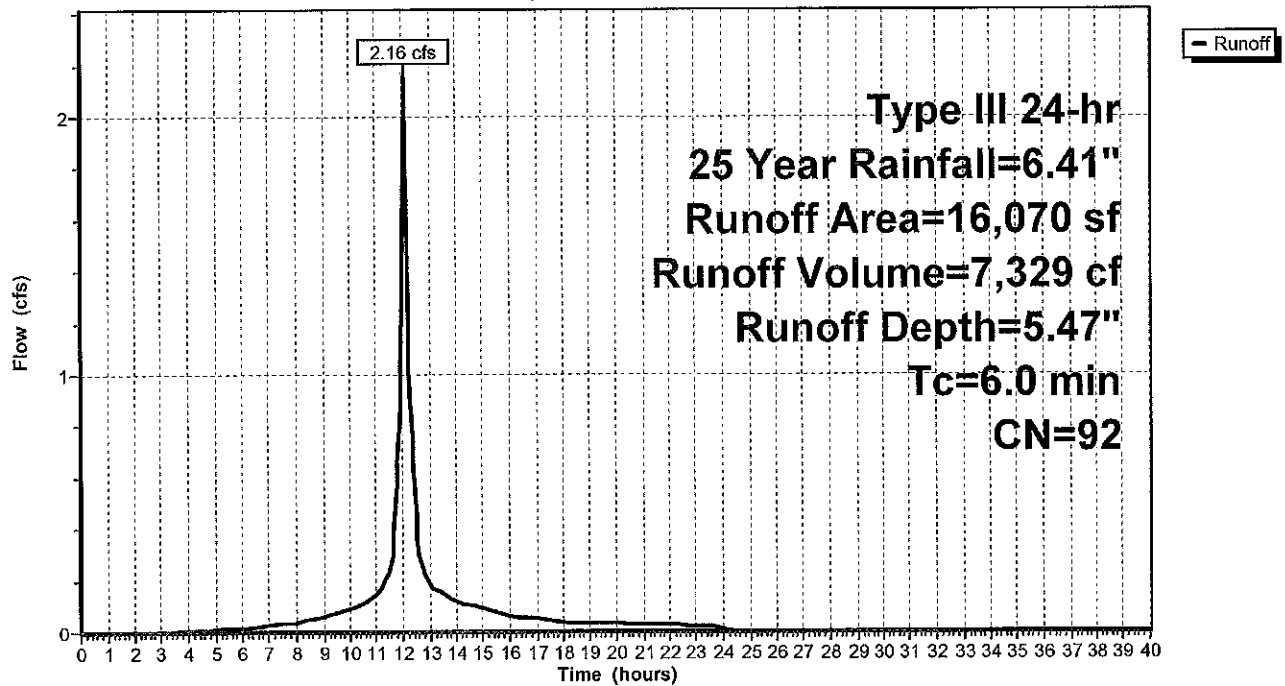
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 25 Year Rainfall=6.41"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 1,588     | 39 | >75% Grass cover, Good, HSG A |
| * 5,839   | 98 | Paved parking, HSG A          |
| * 675     | 98 | Concrete, HSG A               |
| * 15      | 68 | Crushed Stone, Poor, HSG A    |
| * 7,953   | 98 | Unconnected roofs, HSG A      |
| 16,070    | 92 | Weighted Average              |
| 1,603     |    | 9.98% Pervious Area           |
| 14,467    |    | 90.02% Impervious Area        |
| 7,953     |    | 54.97% Unconnected            |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 6.0      |               |               |                   |                | Direct Entry, |

**Subcatchment SC1.1: TO GREEN STREET**

Hydrograph



**EXISTING REA0149**

Prepared by {enter your company name here}  
 HydroCAD® 10.10-6a s/n 03206 © 2020 HydroCAD Software Solutions LLC

Type III 24-hr 25 Year Rainfall=6.41"

Printed 11/23/2022

Page 16

**Summary for Subcatchment SC1.2: TO HAVEN STREET**

Runoff = 0.33 cfs @ 12.09 hrs, Volume= 1,066 cf, Depth= 4.47"  
 Routed to Pond CB : HAVEN STREET DRAINAGE

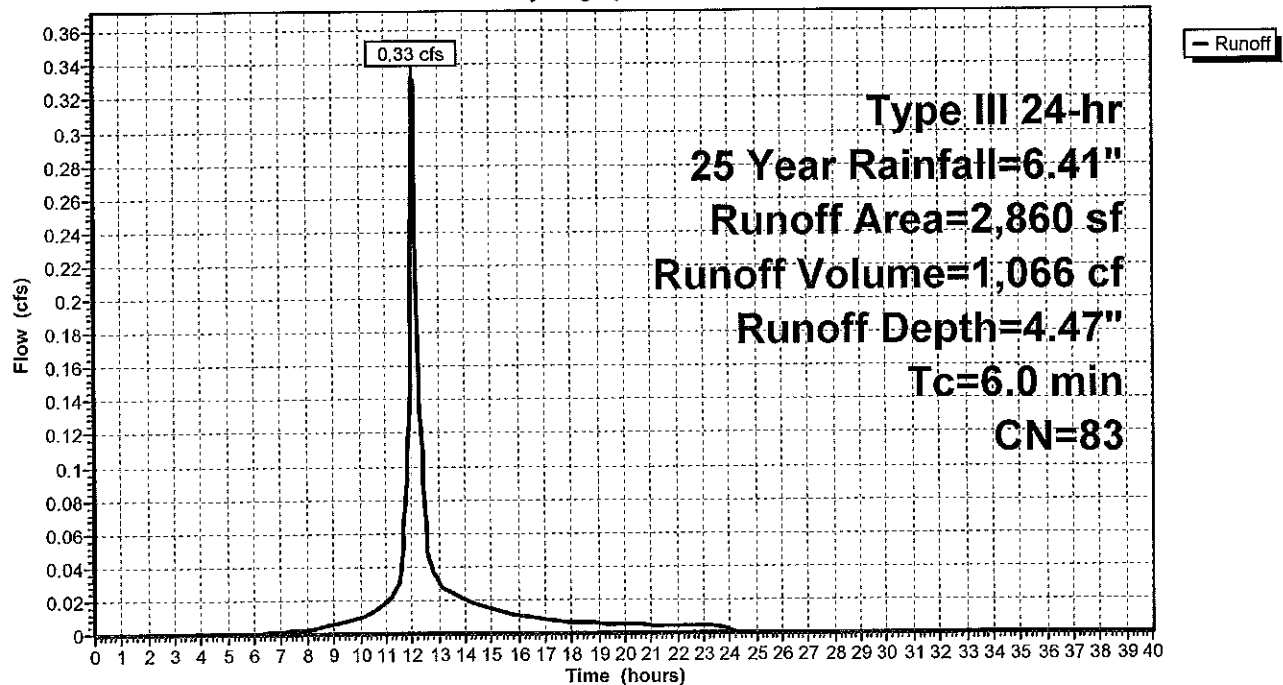
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 25 Year Rainfall=6.41"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 713       | 39 | >75% Grass cover, Good, HSG A |
| * 1,909   | 98 | Paved parking, HSG A          |
| * 238     | 98 | Concrete, HSG A               |
| 2,860     | 83 | Weighted Average              |
| 713       |    | 24.93% Pervious Area          |
| 2,147     |    | 75.07% Impervious Area        |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 6.0      |               |               |                   |                | Direct Entry, |

**Subcatchment SC1.2: TO HAVEN STREET**

Hydrograph





**EXISTING REA0149**

Type III 24-hr 25 Year Rainfall=6.41"

Prepared by {enter your company name here}

Printed 11/23/2022

HydroCAD® 10.10-6a s/n 03206 © 2020 HydroCAD Software Solutions LLC

Page 17

**Summary for Pond CB: HAVEN STREET DRAINAGE**

Inflow Area = 2,860 sf, 75.07% Impervious, Inflow Depth = 4.47" for 25 Year event  
 Inflow = 0.33 cfs @ 12.09 hrs, Volume= 1,066 cf  
 Outflow = 0.33 cfs @ 12.09 hrs, Volume= 1,066 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 0.33 cfs @ 12.09 hrs, Volume= 1,066 cf

Routed to Link DP1 : GREEN ST CB

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs

Peak Elev= 102.61' @ 12.09 hrs

Flood Elev= 104.55'

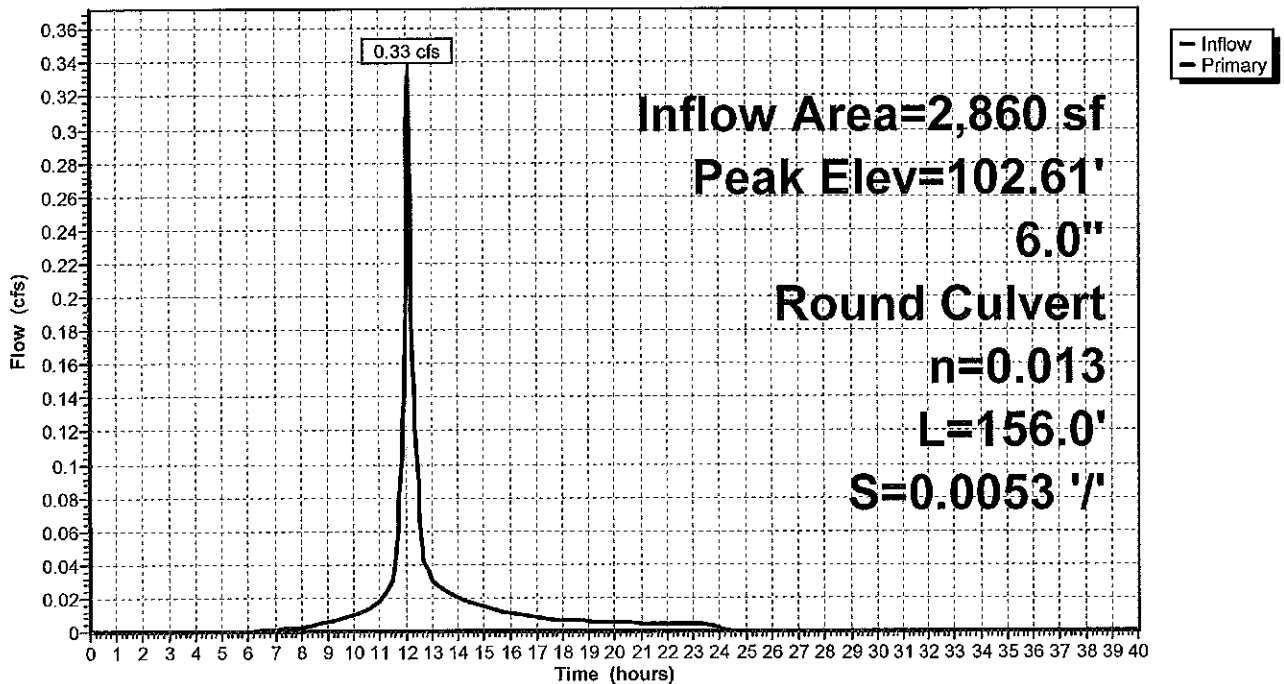
| Device | Routing | Invert  | Outlet Devices  |
|--------|---------|---------|---|
| #1     | Primary | 102.15' | <b>6.0" Round Culvert</b><br>L= 156.0' RCP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 102.15' / 101.33' S= 0.0053 '/' Cc= 0.900<br>n= 0.013, Flow Area= 0.20 sf |

Primary OutFlow Max=0.32 cfs @ 12.09 hrs HW=102.60' TW=0.00' (Dynamic Tailwater)

1=Culvert (Barrel Controls 0.32 cfs @ 2.29 fps)

**Pond CB: HAVEN STREET DRAINAGE**

Hydrograph

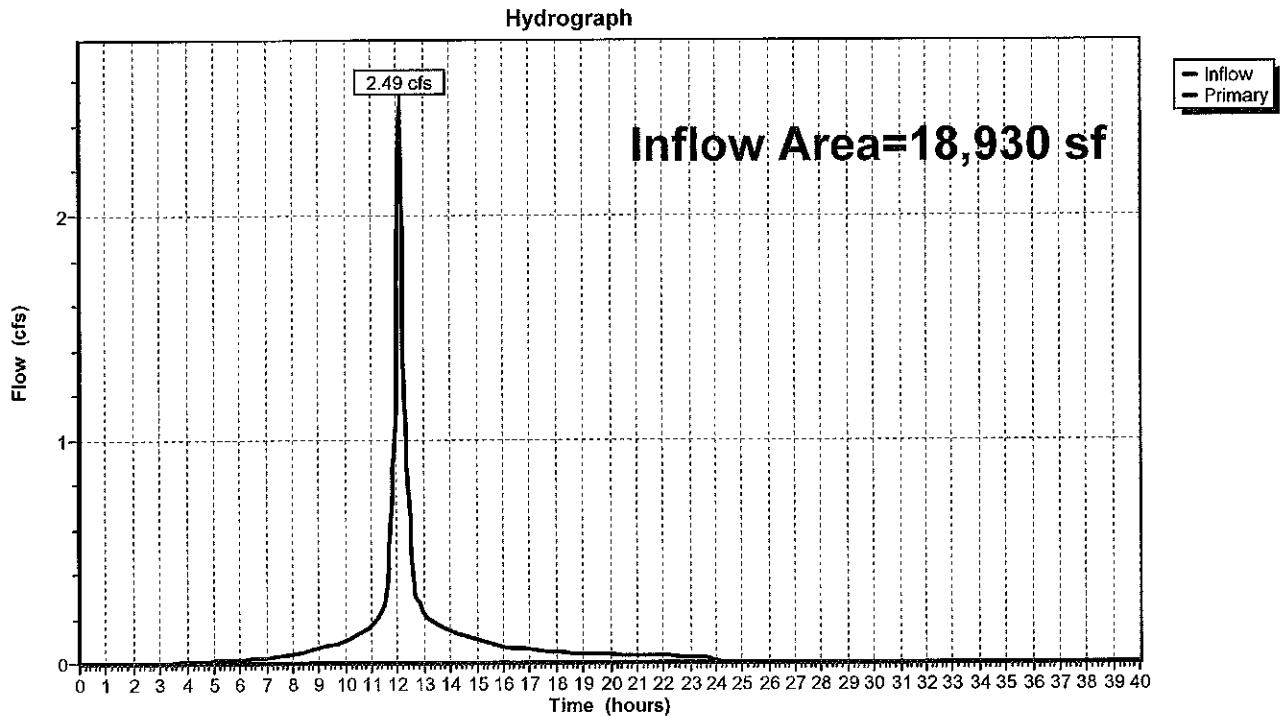


Summary for Link DP1: GREEN ST CB

Inflow Area = 18,930 sf, 87.77% Impervious, Inflow Depth = 5.32" for 25 Year event  
Inflow = 2.49 cfs @ 12.09 hrs, Volume= 8,395 cf  
Primary = 2.49 cfs @ 12.09 hrs, Volume= 8,395 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs

Link DP1: GREEN ST CB





**EXISTING REA0149**

Type III 24-hr 100 Year Rainfall=8.24"

Prepared by {enter your company name here}

Printed 11/23/2022

HydroCAD® 10.10-6a s/n 03206 © 2020 HydroCAD Software Solutions LLC

Page 19

Time span=0.00-40.00 hrs, dt=0.05 hrs, 801 points  
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment SC1.1: TO GREEN STREET** Runoff Area=16,070 sf 90.02% Impervious Runoff Depth=7.28"  
Tc=6.0 min CN=92 Runoff=2.83 cfs 9,751 cf

**Subcatchment SC1.2: TO HAVEN STREET** Runoff Area=2,860 sf 75.07% Impervious Runoff Depth=6.21"  
Tc=6.0 min CN=83 Runoff=0.45 cfs 1,479 cf

**Pond CB: HAVEN STREET DRAINAGE** Peak Elev=102.96' Inflow=0.45 cfs 1,479 cf  
6.0" Round Culvert n=0.013 L=156.0' S=0.0053 '/' Outflow=0.45 cfs 1,479 cf

**Link DP1: GREEN ST CB** Inflow=3.28 cfs 11,230 cf  
Primary=3.28 cfs 11,230 cf

**Total Runoff Area = 18,930 sf Runoff Volume = 11,230 cf Average Runoff Depth = 7.12"**  
**12.23% Pervious = 2,316 sf 87.77% Impervious = 16,614 sf**

**EXISTING REA0149**

Type III 24-hr 100 Year Rainfall=8.24"

Prepared by {enter your company name here}

Printed 11/23/2022

HydroCAD® 10.10-6a s/n 03206 © 2020 HydroCAD Software Solutions LLC

Page 20

**Summary for Subcatchment SC1.1: TO GREEN STREET**

Runoff = 2.83 cfs @ 12.09 hrs, Volume= 9,751 cf, Depth= 7.28"  
 Routed to Link DP1 : GREEN ST CB

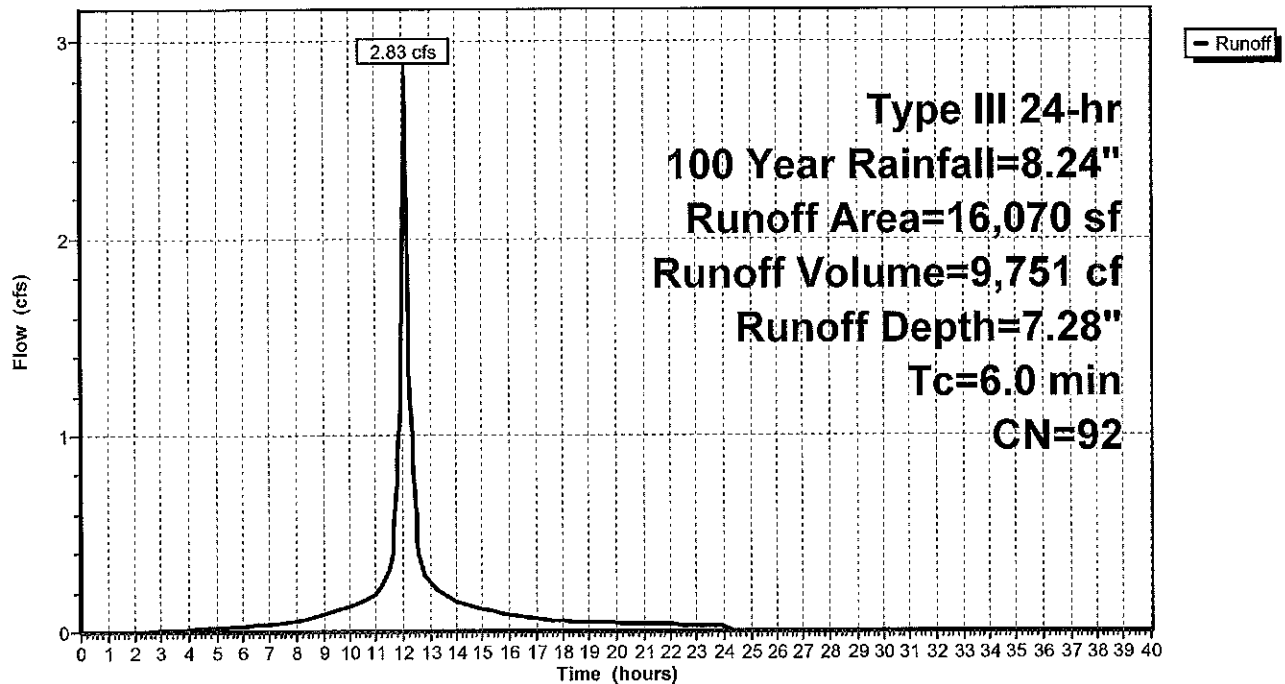
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 100 Year Rainfall=8.24"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 1,588     | 39 | >75% Grass cover, Good, HSG A |
| * 5,839   | 98 | Paved parking, HSG A          |
| * 675     | 98 | Concrete, HSG A               |
| * 15      | 68 | Crushed Stone, Poor, HSG A    |
| * 7,953   | 98 | Unconnected roofs, HSG A      |
| 16,070    | 92 | Weighted Average              |
| 1,603     |    | 9.98% Pervious Area           |
| 14,467    |    | 90.02% Impervious Area        |
| 7,953     |    | 54.97% Unconnected            |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 6.0      |               |               |                   |                | Direct Entry, |

**Subcatchment SC1.1: TO GREEN STREET**

Hydrograph





**EXISTING REA0149**

Type III 24-hr 100 Year Rainfall=8.24"

Prepared by {enter your company name here}

Printed 11/23/2022

HydroCAD® 10.10-6a s/n 03206 © 2020 HydroCAD Software Solutions LLC

Page 21

**Summary for Subcatchment SC1.2: TO HAVEN STREET**

Runoff = 0.45 cfs @ 12.09 hrs, Volume= 1,479 cf, Depth= 6.21"  
 Routed to Pond CB : HAVEN STREET DRAINAGE

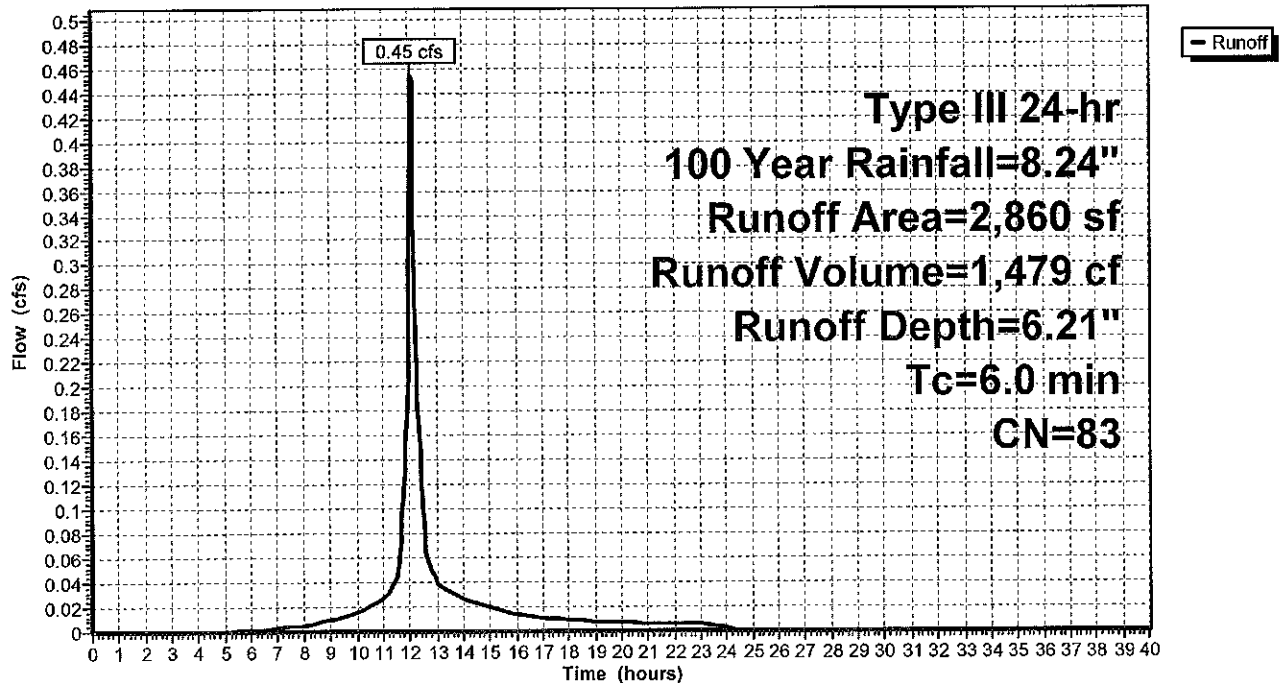
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 100 Year Rainfall=8.24"

|   | Area (sf) | CN | Description                   |
|---|-----------|----|-------------------------------|
|   | 713       | 39 | >75% Grass cover, Good, HSG A |
| * | 1,909     | 98 | Paved parking, HSG A          |
| * | 238       | 98 | Concrete, HSG A               |
|   | 2,860     | 83 | Weighted Average              |
|   | 713       |    | 24.93% Pervious Area          |
|   | 2,147     |    | 75.07% Impervious Area        |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 6.0      |               |               |                   |                | Direct Entry, |

**Subcatchment SC1.2: TO HAVEN STREET**

Hydrograph



**EXISTING REA0149**

Type III 24-hr 100 Year Rainfall=8.24"

Prepared by {enter your company name here}

Printed 11/23/2022

HydroCAD® 10.10-6a s/n 03206 © 2020 HydroCAD Software Solutions LLC

Page 22

**Summary for Pond CB: HAVEN STREET DRAINAGE**

Inflow Area = 2,860 sf, 75.07% Impervious, Inflow Depth = 6.21" for 100 Year event  
 Inflow = 0.45 cfs @ 12.09 hrs, Volume= 1,479 cf  
 Outflow = 0.45 cfs @ 12.09 hrs, Volume= 1,479 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 0.45 cfs @ 12.09 hrs, Volume= 1,479 cf  
 Routed to Link DP1 : GREEN ST CB

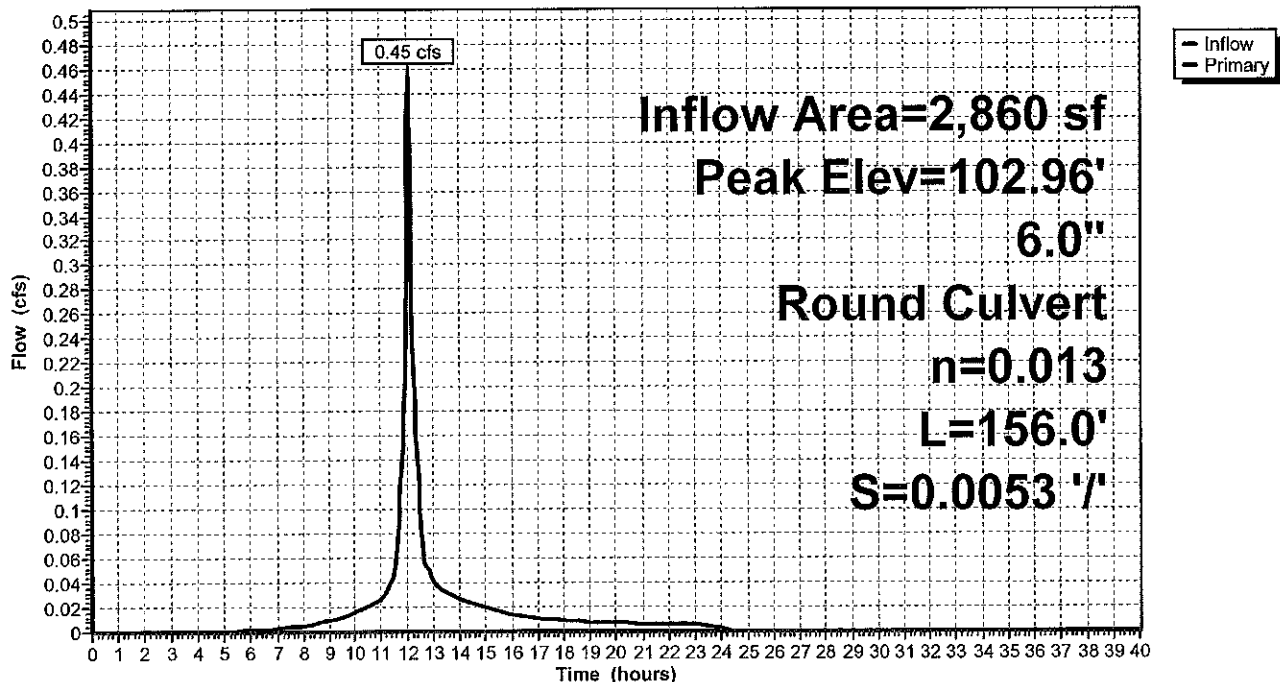
Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs  
 Peak Elev= 102.96' @ 12.10 hrs  
 Flood Elev= 104.55'

| Device # | Routing | Invert  | Outlet Devices   |
|----------|---------|---------|--|
| #1       | Primary | 102.15' | <b>6.0" Round Culvert</b><br>L= 156.0' RCP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 102.15' / 101.33' S= 0.0053 '/ Cc= 0.900<br>n= 0.013, Flow Area= 0.20 sf |

Primary OutFlow Max=0.44 cfs @ 12.09 hrs HW=102.91' TW=0.00' (Dynamic Tailwater)  
 ↑1=Culvert (Barrel Controls 0.44 cfs @ 2.24 fps)

**Pond CB: HAVEN STREET DRAINAGE**

Hydrograph



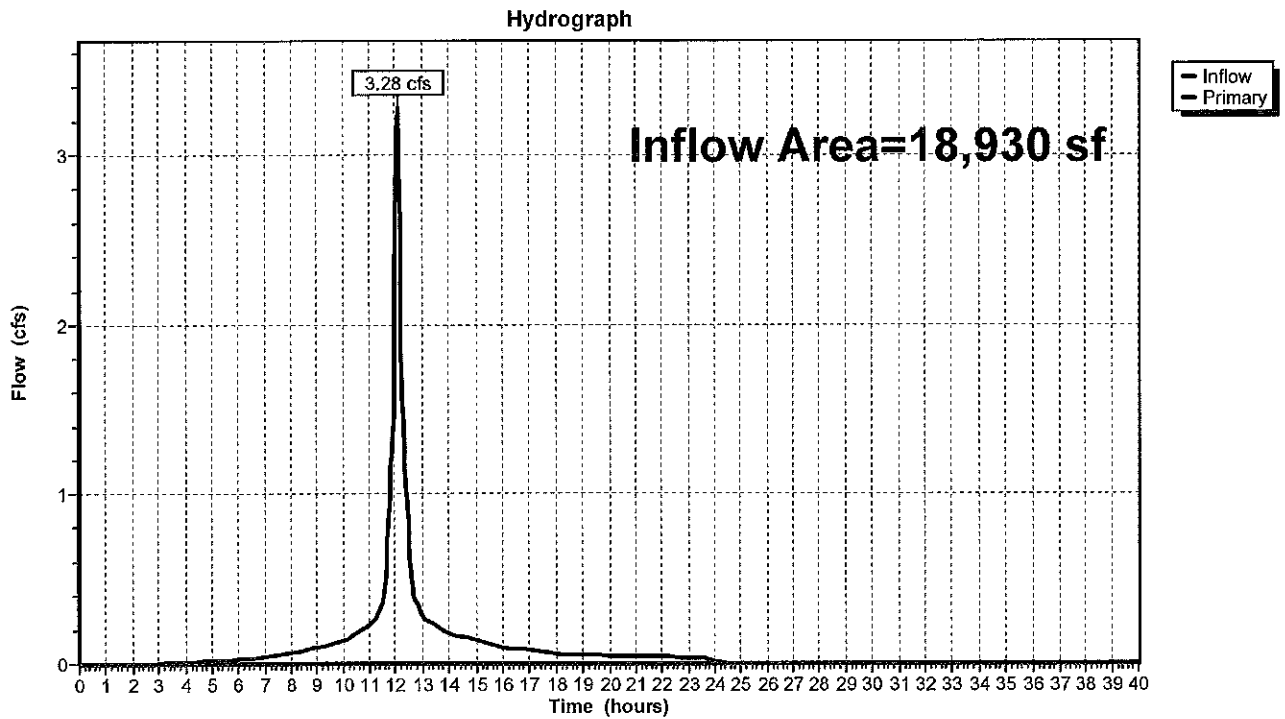


**Summary for Link DP1: GREEN ST CB**

Inflow Area = 18,930 sf, 87.77% Impervious, Inflow Depth = 7.12" for 100 Year event  
Inflow = 3.28 cfs @ 12.09 hrs, Volume= 11,230 cf  
Primary = 3.28 cfs @ 12.09 hrs, Volume= 11,230 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs

**Link DP1: GREEN ST CB**



**EXISTING REA0149**

Prepared by {enter your company name here}  
HydroCAD® 10.10-6a s/n 03206 © 2020 HydroCAD Software Solutions LLC

*Multi-Event Tables*

Printed 11/23/2022

Page 24

**Events for Subcatchment SC1.1: TO GREEN STREET**

| Event    | Rainfall<br>(inches) | Runoff<br>(cfs) | Volume<br>(cubic-feet) | Depth<br>(inches) |
|----------|----------------------|-----------------|------------------------|-------------------|
| 2 Year   | 3.31                 | 1.01            | 3,288                  | 2.46              |
| 10 Year  | 5.22                 | 1.72            | 5,764                  | 4.30              |
| 25 Year  | 6.41                 | 2.16            | 7,329                  | 5.47              |
| 100 Year | <b>8.24</b>          | <b>2.83</b>     | <b>9,751</b>           | <b>7.28</b>       |



**EXISTING REA0149**

Prepared by {enter your company name here}

HydroCAD® 10.10-6a s/n 03206 © 2020 HydroCAD Software Solutions LLC

*Multi-Event Tables*

Printed 11/23/2022

Page 25

**Events for Subcatchment SC1.2: TO HAVEN STREET**

| Event    | Rainfall<br>(inches) | Runoff<br>(cfs) | Volume<br>(cubic-feet) | Depth<br>(inches) |
|----------|----------------------|-----------------|------------------------|-------------------|
| 2 Year   | 3.31                 | 0.13            | 405                    | 1.70              |
| 10 Year  | 5.22                 | 0.25            | 804                    | 3.37              |
| 25 Year  | 6.41                 | 0.33            | 1,066                  | 4.47              |
| 100 Year | <b>8.24</b>          | <b>0.45</b>     | <b>1,479</b>           | <b>6.21</b>       |

**EXISTING REA0149**

Prepared by {enter your company name here}

HydroCAD® 10.10-6a s/n 03206 © 2020 HydroCAD Software Solutions LLC

*Multi-Event Tables*

Printed 11/23/2022

Page 26

**Events for Pond CB: HAVEN STREET DRAINAGE**

| Event    | Inflow<br>(cfs) | Primary<br>(cfs) | Elevation<br>(feet) | Storage<br>(cubic-feet) |
|----------|-----------------|------------------|---------------------|-------------------------|
| 2 Year   | 0.13            | 0.13             | 102.41              | 0                       |
| 10 Year  | 0.25            | 0.25             | 102.53              | 0                       |
| 25 Year  | 0.33            | 0.33             | 102.61              | 0                       |
| 100 Year | 0.45            | 0.45             | 102.96              | 0                       |



**EXISTING REA0149**

Prepared by {enter your company name here}

HydroCAD® 10.10-6a s/n 03206 © 2020 HydroCAD Software Solutions LLC

*Multi-Event Tables*

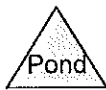
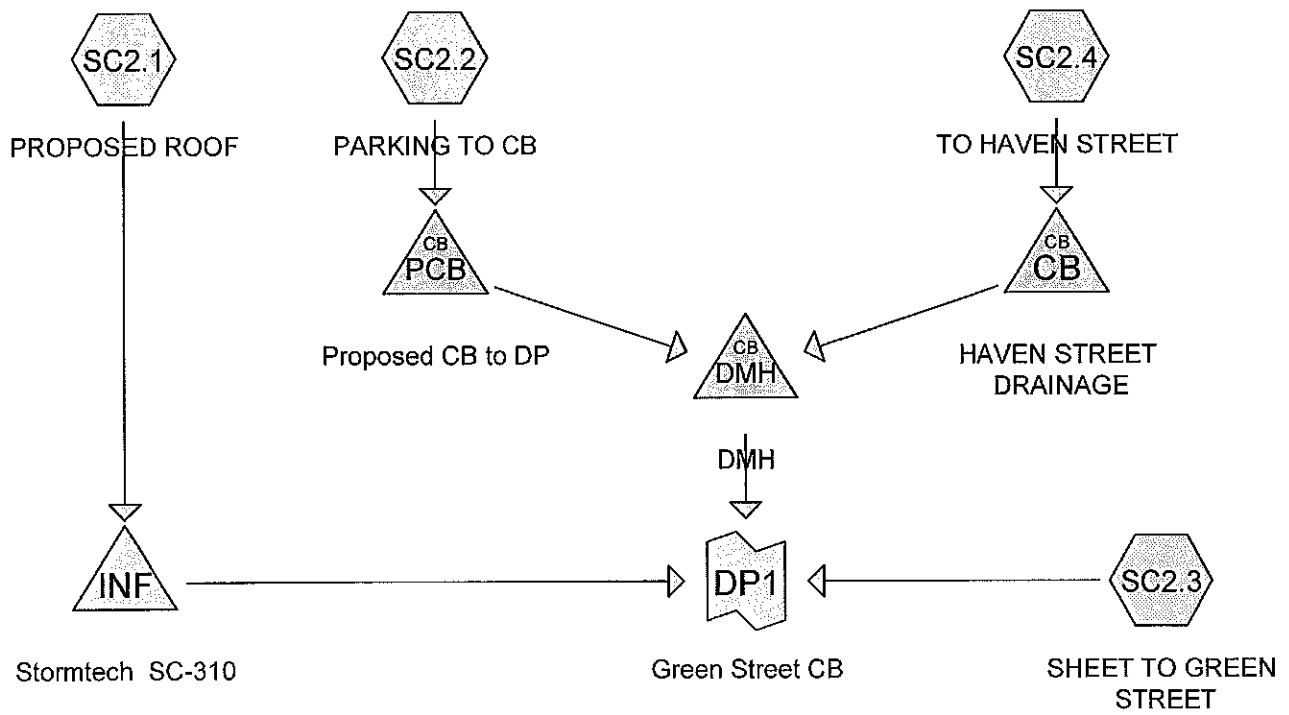
Printed 11/23/2022

Page 27

**Events for Link DP1: GREEN ST CB**

| Event    | Inflow<br>(cfs) | Primary<br>(cfs) | Elevation<br>(feet) |
|----------|-----------------|------------------|---------------------|
| 2 Year   | 1.14            | 1.14             | <b>0.00</b>         |
| 10 Year  | 1.97            | 1.97             | 0.00                |
| 25 Year  | 2.49            | 2.49             | 0.00                |
| 100 Year | <b>3.28</b>     | <b>3.28</b>      | 0.00                |

### PROPOSED RUNOFF



**Routing Diagram for PROPOSED REA0149**  
 Prepared by {enter your company name here}, Printed 11/23/2022  
 HydroCAD® 10.10-6a s/n 03206 © 2020 HydroCAD Software Solutions LLC



**PROPOSED REA0149**

Prepared by {enter your company name here}  
HydroCAD® 10.10-6a s/n 03206 © 2020 HydroCAD Software Solutions LLC

Printed 11/23/2022

Page 2

**Rainfall Events Listing**

| Event# | Event Name | Storm Type     | Curve | Mode    | Duration (hours) | B/B | Depth (inches) | AMC |
|--------|------------|----------------|-------|---------|------------------|-----|----------------|-----|
| 1      | 2 Year     | Type III 24-hr |       | Default | 24.00            | 1   | 3.31           | 2   |
| 2      | 10 Year    | Type III 24-hr |       | Default | 24.00            | 1   | 5.22           | 2   |
| 3      | 25 Year    | Type III 24-hr |       | Default | 24.00            | 1   | 6.41           | 2   |
| 4      | 100 Year   | Type III 24-hr |       | Default | 24.00            | 1   | 8.24           | 2   |

**PROPOSED REA0149**

Prepared by {enter your company name here}

HydroCAD® 10.10-6a s/n 03206 © 2020 HydroCAD Software Solutions LLC

Printed 11/23/2022

Page 3

**Area Listing (all nodes)**

| Area<br>(sq-ft) | CN        | Description<br>(subcatchment-numbers)        |
|-----------------|-----------|--|
| 3,523           | 39        | >75% Grass cover, Good, HSG A (SC2.3, SC2.4) |
| 2,493           | 98        | Concrete, HSG A (SC2.2, SC2.3, SC2.4)        |
| 4,315           | 98        | Paved parking, HSG A (SC2.2)                 |
| 8,600           | 98        | Unconnected roofs, HSG A (SC2.1)             |
| <b>18,931</b>   | <b>87</b> | <b>TOTAL AREA</b>                            |



**PROPOSED REA0149**

Type III 24-hr 2 Year Rainfall=3.31"

Prepared by {enter your company name here}

Printed 11/23/2022

HydroCAD® 10.10-6a s/n 03206 © 2020 HydroCAD Software Solutions LLC

Page 4

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points  
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment SC2.1: PROPOSED ROOF** Runoff Area=8,600 sf 100.00% Impervious Runoff Depth=3.08"  
Tc=6.0 min CN=98 Runoff=0.62 cfs 2,205 cf

**Subcatchment SC2.2: PARKING TO CB** Runoff Area=4,532 sf 100.00% Impervious Runoff Depth=3.08"  
Tc=6.0 min CN=98 Runoff=0.33 cfs 1,162 cf

**Subcatchment SC2.3: SHEET TO GREEN** Runoff Area=5,283 sf 39.18% Impervious Runoff Depth=0.53"  
Tc=6.0 min CN=62 Runoff=0.05 cfs 233 cf

**Subcatchment SC2.4: TO HAVEN STREET** Runoff Area=516 sf 39.92% Impervious Runoff Depth=0.57"  
Tc=6.0 min CN=63 Runoff=0.01 cfs 24 cf

**Pond CB: HAVEN STREET DRAINAGE** Peak Elev=102.20' Inflow=0.01 cfs 24 cf  
6.0" Round Culvert n=0.011 L=174.0' S=0.0053 '/' Outflow=0.01 cfs 24 cf

**Pond DMH: DMH** Peak Elev=101.41' Inflow=0.33 cfs 1,187 cf  
8.0" Round Culvert n=0.011 L=89.0' S=0.0053 '/' Outflow=0.33 cfs 1,187 cf

**Pond INF: Stormtech SC-310** Peak Elev=101.51' Storage=253 cf Inflow=0.62 cfs 2,205 cf  
Discarded=0.23 cfs 2,218 cf Primary=0.00 cfs 0 cf Outflow=0.23 cfs 2,218 cf

**Pond PCB: Proposed CB to DP** Peak Elev=101.48' Inflow=0.33 cfs 1,162 cf  
8.0" Round Culvert n=0.011 L=1.0' S=0.0000 '/' Outflow=0.33 cfs 1,162 cf

**Link DP1: Green Street CB** Inflow=0.38 cfs 1,419 cf  
Primary=0.38 cfs 1,419 cf

**Total Runoff Area = 18,931 sf Runoff Volume = 3,625 cf Average Runoff Depth = 2.30"**  
**18.61% Pervious = 3,523 sf 81.39% Impervious = 15,408 sf**

**PROPOSED REA0149**

Type III 24-hr 2 Year Rainfall=3.31"

Prepared by {enter your company name here}

Printed 11/23/2022

HydroCAD® 10.10-6a s/n 03206 © 2020 HydroCAD Software Solutions LLC

Page 5

**Summary for Subcatchment SC2.1: PROPOSED ROOF**

Runoff = 0.62 cfs @ 12.09 hrs, Volume= 2,205 cf, Depth= 3.08"  
 Routed to Pond INF : Stormtech SC-310

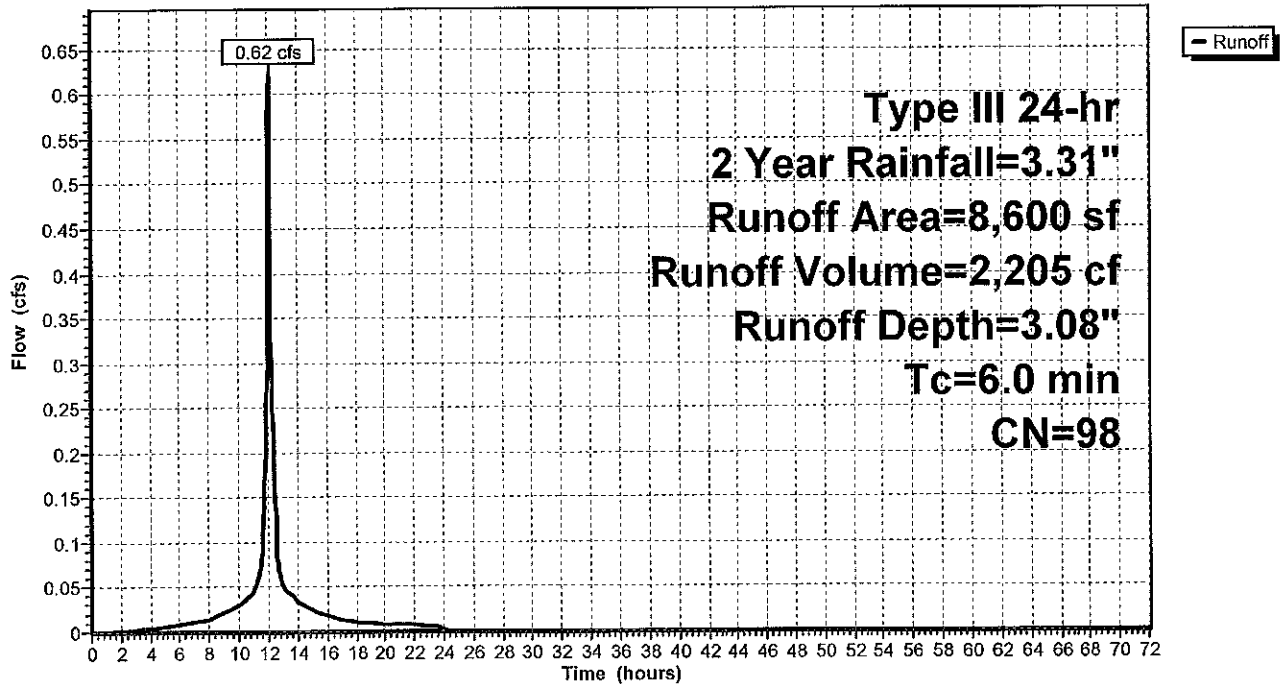
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 2 Year Rainfall=3.31"

| Area (sf) | CN | Description              |
|-----------|----|--------------------------|
| * 8,600   | 98 | Unconnected roofs, HSG A |
| 8,600     |    | 100.00% Impervious Area  |
| 8,600     |    | 100.00% Unconnected      |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 6.0      |               |               |                   |                | Direct Entry, |

**Subcatchment SC2.1: PROPOSED ROOF**

Hydrograph





**PROPOSED REA0149**

Type III 24-hr 2 Year Rainfall=3.31"

Prepared by {enter your company name here}

Printed 11/23/2022

HydroCAD® 10.10-6a s/n 03206 © 2020 HydroCAD Software Solutions LLC

Page 6

**Summary for Subcatchment SC2.2: PARKING TO CB**

Runoff = 0.33 cfs @ 12.09 hrs, Volume= 1,162 cf, Depth= 3.08"  
 Routed to Pond PCB : Proposed CB to DP

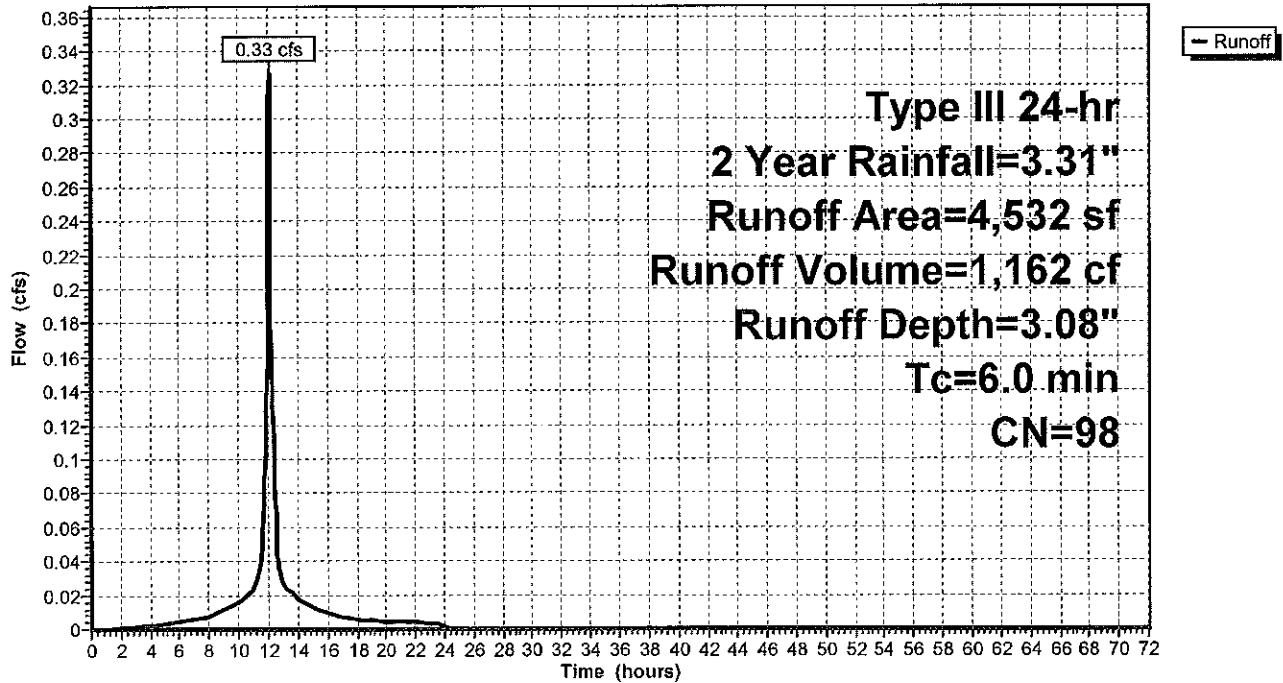
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 2 Year Rainfall=3.31"

|   | Area (sf) | CN | Description             |
|---|-----------|----|-------------------------|
| * | 4,315     | 98 | Paved parking, HSG A    |
| * | 217       | 98 | Concrete, HSG A         |
|   | 4,532     | 98 | Weighted Average        |
|   | 4,532     |    | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 6.0      |               |               |                   |                | Direct Entry, |

**Subcatchment SC2.2: PARKING TO CB**

Hydrograph



**PROPOSED REA0149**

Prepared by {enter your company name here}

HydroCAD® 10.10-6a s/n 03206 © 2020 HydroCAD Software Solutions LLC

Type III 24-hr 2 Year Rainfall=3.31"

Printed 11/23/2022

Page 7

**Summary for Subcatchment SC2.3: SHEET TO GREEN STREET**

Runoff = 0.05 cfs @ 12.12 hrs, Volume= 233 cf, Depth= 0.53"  
 Routed to Link DP1 : Green Street CB

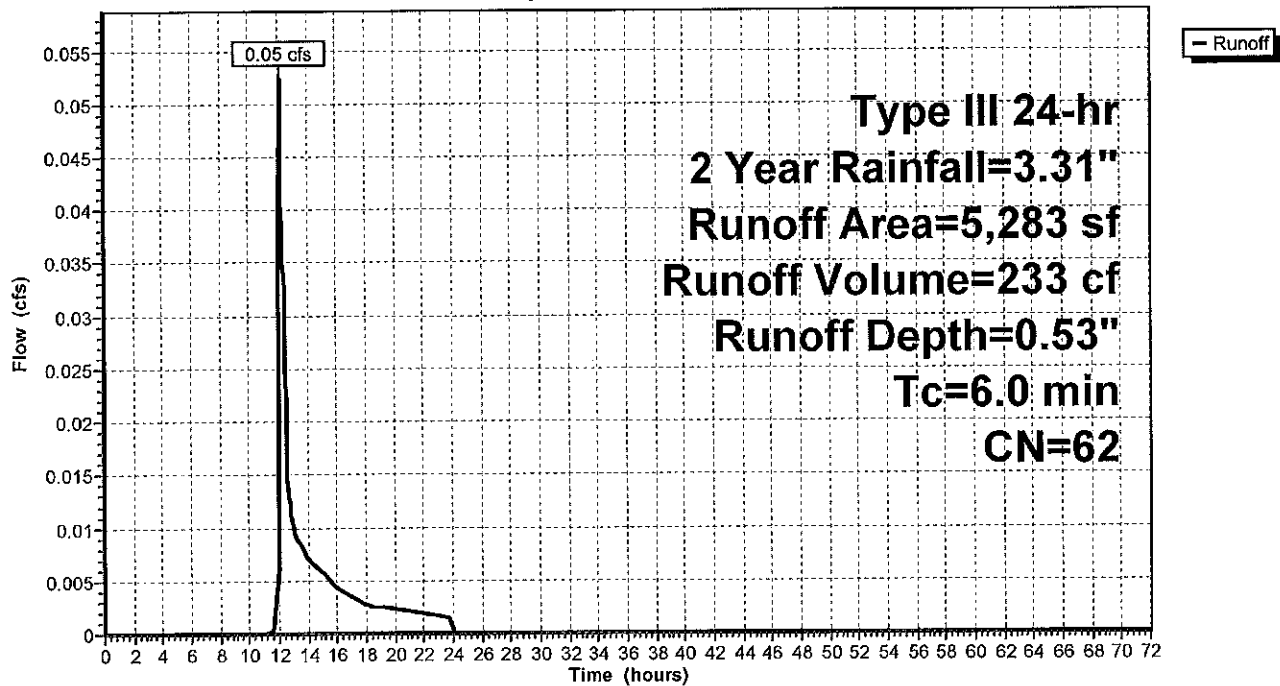
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 2 Year Rainfall=3.31"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 3,213     | 39 | >75% Grass cover, Good, HSG A |
| * 2,070   | 98 | Concrete, HSG A               |
| 5,283     | 62 | Weighted Average              |
| 3,213     |    | 60.82% Pervious Area          |
| 2,070     |    | 39.18% Impervious Area        |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 6.0      |               |               |                   |                | Direct Entry, |

**Subcatchment SC2.3: SHEET TO GREEN STREET**

Hydrograph





**PROPOSED REA0149**

Type III 24-hr 2 Year Rainfall=3.31"

Prepared by {enter your company name here}

Printed 11/23/2022

HydroCAD® 10.10-6a s/n 03206 © 2020 HydroCAD Software Solutions LLC

Page 8

**Summary for Subcatchment SC2.4: TO HAVEN STREET**

Runoff = 0.01 cfs @ 12.12 hrs, Volume= 24 cf, Depth= 0.57"  
 Routed to Pond CB : HAVEN STREET DRAINAGE

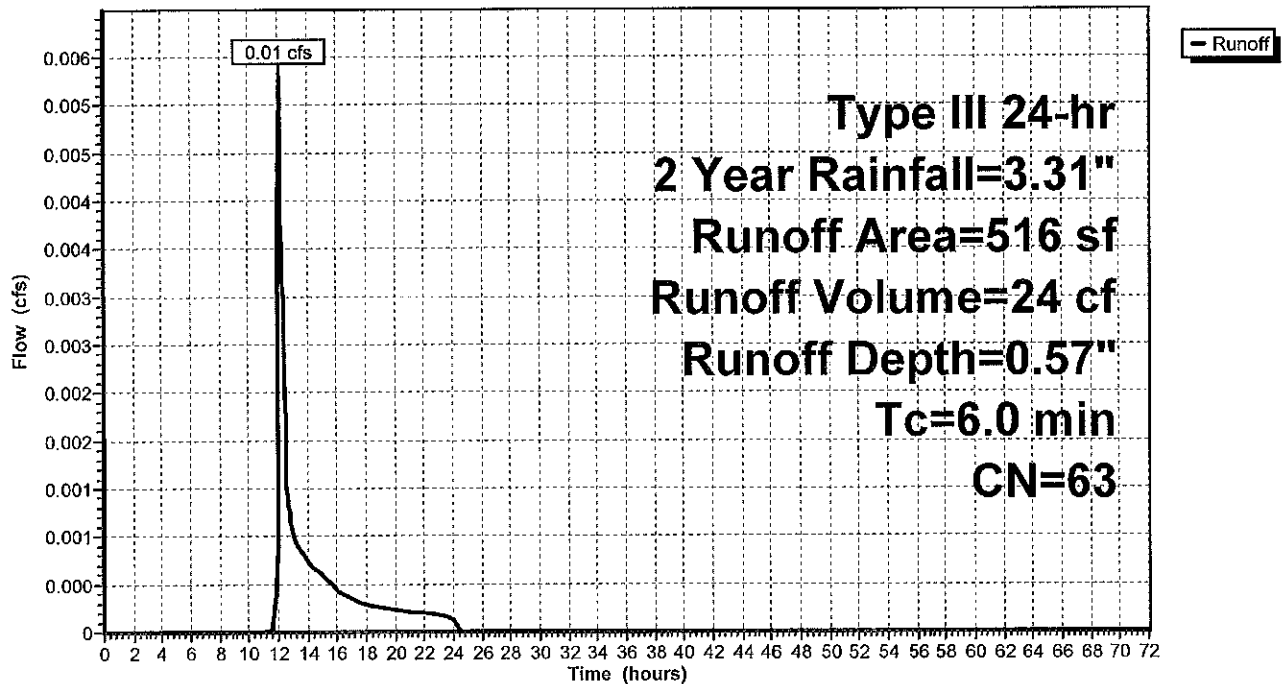
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 2 Year Rainfall=3.31"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 310       | 39 | >75% Grass cover, Good, HSG A |
| * 206     | 98 | Concrete, HSG A               |
| 516       | 63 | Weighted Average              |
| 310       |    | 60.08% Pervious Area          |
| 206       |    | 39.92% Impervious Area        |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 6.0      |               |               |                   |                | Direct Entry, |

**Subcatchment SC2.4: TO HAVEN STREET**

Hydrograph



**PROPOSED REA0149**

Type III 24-hr 2 Year Rainfall=3.31"

Prepared by {enter your company name here}

Printed 11/23/2022

HydroCAD® 10.10-6a s/n 03206 © 2020 HydroCAD Software Solutions LLC

Page 9

**Summary for Pond CB: HAVEN STREET DRAINAGE**

Inflow Area = 516 sf, 39.92% Impervious, Inflow Depth = 0.57" for 2 Year event  
 Inflow = 0.01 cfs @ 12.12 hrs, Volume= 24 cf  
 Outflow = 0.01 cfs @ 12.12 hrs, Volume= 24 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 0.01 cfs @ 12.12 hrs, Volume= 24 cf  
 Routed to Pond DMH : DMH

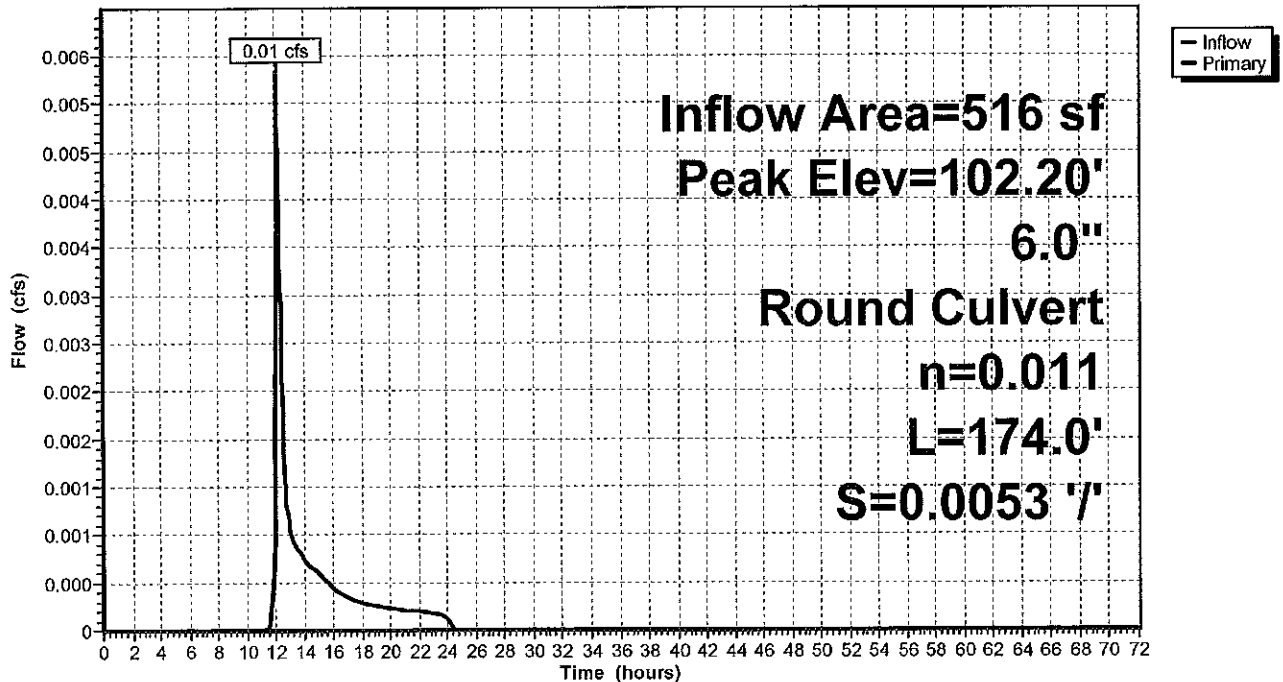
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Peak Elev= 102.20' @ 12.12 hrs  
 Flood Elev= 104.55'

| Device # | Routing | Invert  | Outlet Devices   |
|----------|---------|---------|--|
| #1       | Primary | 102.15' | <b>6.0" Round Culvert</b><br>L= 174.0' CPP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 102.15' / 101.22' S= 0.0053 '/ Cc= 0.900<br>n= 0.011, Flow Area= 0.20 sf |

Primary OutFlow Max=0.01 cfs @ 12.12 hrs HW=102.20' TW=101.39' (Dynamic Tailwater)  
 ↑1=Culvert (Outlet Controls 0.01 cfs @ 0.78 fps)

**Pond CB: HAVEN STREET DRAINAGE**

Hydrograph





**PROPOSED REA0149**

Type III 24-hr 2 Year Rainfall=3.31"

Prepared by {enter your company name here}

Printed 11/23/2022

HydroCAD® 10.10-6a s/n 03206 © 2020 HydroCAD Software Solutions LLC

Page 10

**Summary for Pond DMH: DMH**

Inflow Area = 5,048 sf, 93.86% Impervious, Inflow Depth = 2.82" for 2 Year event  
 Inflow = 0.33 cfs @ 12.09 hrs, Volume= 1,187 cf  
 Outflow = 0.33 cfs @ 12.09 hrs, Volume= 1,187 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 0.33 cfs @ 12.09 hrs, Volume= 1,187 cf  
 Routed to Link DP1 : Green Street CB

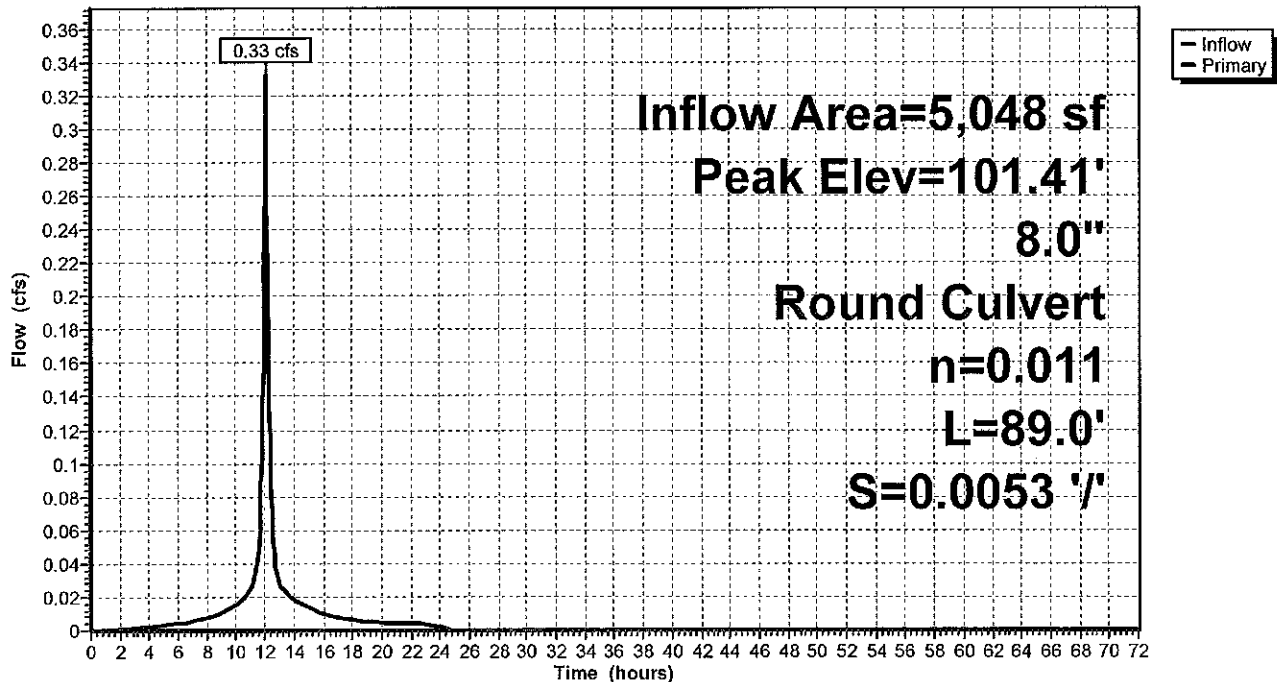
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Peak Elev= 101.41' @ 12.09 hrs  
 Flood Elev= 105.10'

| Device | Routing | Invert  | Outlet Devices  |
|--------|---------|---------|---|
| #1     | Primary | 101.05' | <b>8.0" Round Culvert</b><br>L= 89.0' CPP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 101.05' / 100.58' S= 0.0053 '/ Cc= 0.900<br>n= 0.011, Flow Area= 0.35 sf |

Primary OutFlow Max=0.32 cfs @ 12.09 hrs HW=101.40' TW=0.00' (Dynamic Tailwater)  
 ↑1=Culvert (Barrel Controls 0.32 cfs @ 2.50 fps)

**Pond DMH: DMH**

Hydrograph



**PROPOSED REA0149**

Type III 24-hr 2 Year Rainfall=3.31"

Prepared by {enter your company name here}

Printed 11/23/2022

HydroCAD® 10.10-6a s/n 03206 © 2020 HydroCAD Software Solutions LLC

Page 11

**Summary for Pond INF: Stormtech SC-310**

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=110)

Inflow Area = 8,600 sf, 100.00% Impervious, Inflow Depth = 3.08" for 2 Year event  
 Inflow = 0.62 cfs @ 12.09 hrs, Volume= 2,205 cf  
 Outflow = 0.23 cfs @ 12.00 hrs, Volume= 2,218 cf, Atten= 62%, Lag= 0.0 min  
 Discarded = 0.23 cfs @ 12.00 hrs, Volume= 2,218 cf  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf  
 Routed to Link DP1 : Green Street CB

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Peak Elev= 101.51' @ 12.33 hrs Surf.Area= 1,222 sf Storage= 253 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)  
 Center-of-Mass det. time= 4.5 min ( 760.2 - 755.7 )

| Volume | Invert  | Avail.Storage | Storage Description  |
|--------|---------|---------------|--|
| #1A    | 101.00' | 875 cf        | <b>18.17'W x 67.28'L x 2.33'H Field A</b><br>2,852 cf Overall - 663 cf Embedded = 2,189 cf x 40.0% Voids   |
| #2A    | 101.50' | 663 cf        | <b>ADS_StormTech SC-310 +Cap x 45 Inside #1</b><br>Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf<br>Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap<br>45 Chambers in 5 Rows |
|        |         | 1,539 cf      | Total Available Storage  |

Storage Group A created with Chamber Wizard

| Device | Routing   | Invert  | Outlet Devices  |
|--------|-----------|---------|---|
| #1     | Discarded | 101.00' | <b>8.270 in/hr Exfiltration over Surface area</b>   |
| #2     | Primary   | 102.50' | <b>6.0" Round Culvert</b><br>L= 26.0' CPP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 102.50' / 101.05' S= 0.0558 '/ Cc= 0.900<br>n= 0.011, Flow Area= 0.20 sf |

**Discarded OutFlow** Max=0.23 cfs @ 12.00 hrs HW=101.06' (Free Discharge)  
 ↑1=Exfiltration (Exfiltration Controls 0.23 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=101.00' TW=0.00' (Dynamic Tailwater)  
 ↑2=Culvert ( Controls 0.00 cfs)



**PROPOSED REA0149**

Prepared by {enter your company name here}

HydroCAD® 10.10-6a s/n 03206 © 2020 HydroCAD Software Solutions LLC

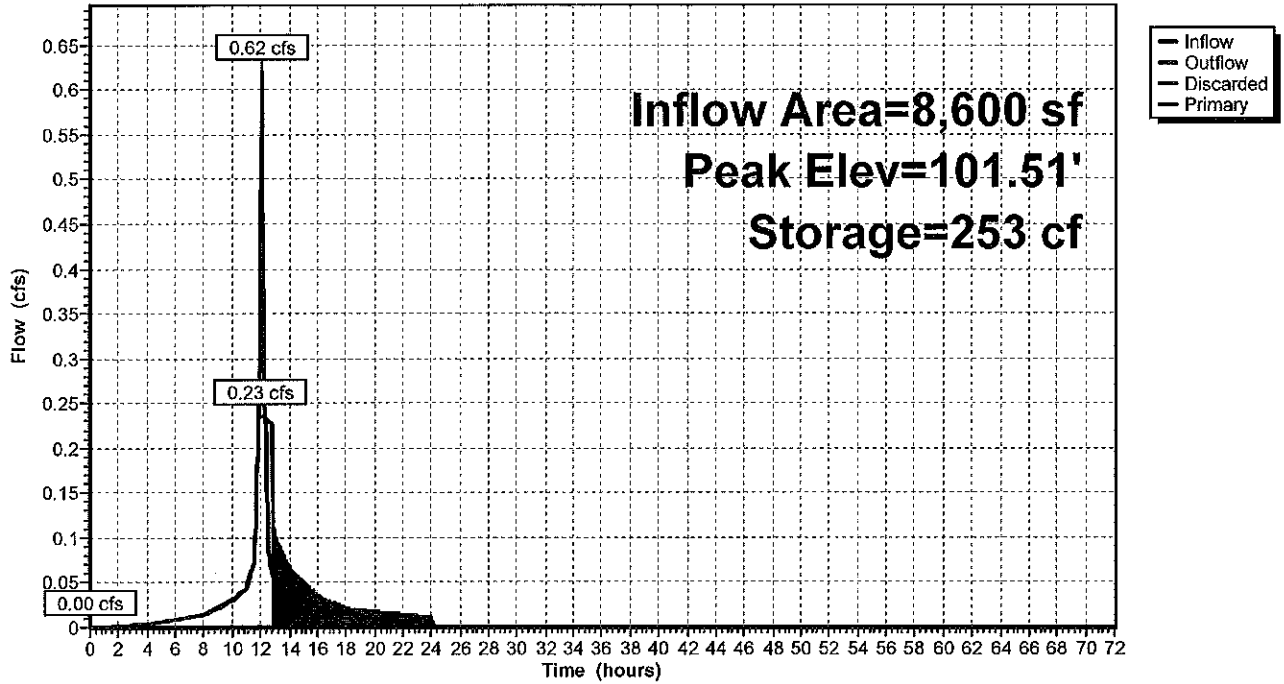
Type III 24-hr 2 Year Rainfall=3.31"

Printed 11/23/2022

Page 12

**Pond INF: Stormtech SC-310**

Hydrograph



**PROPOSED REA0149**

Type III 24-hr 2 Year Rainfall=3.31"

Prepared by {enter your company name here}

Printed 11/23/2022

HydroCAD® 10.10-6a s/n 03206 © 2020 HydroCAD Software Solutions LLC

Page 13

**Summary for Pond PCB: Proposed CB to DP**

Inflow Area = 4,532 sf, 100.00% Impervious, Inflow Depth = 3.08" for 2 Year event  
 Inflow = 0.33 cfs @ 12.09 hrs, Volume= 1,162 cf  
 Outflow = 0.33 cfs @ 12.09 hrs, Volume= 1,162 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 0.33 cfs @ 12.09 hrs, Volume= 1,162 cf  
 Routed to Pond DMH : DMH

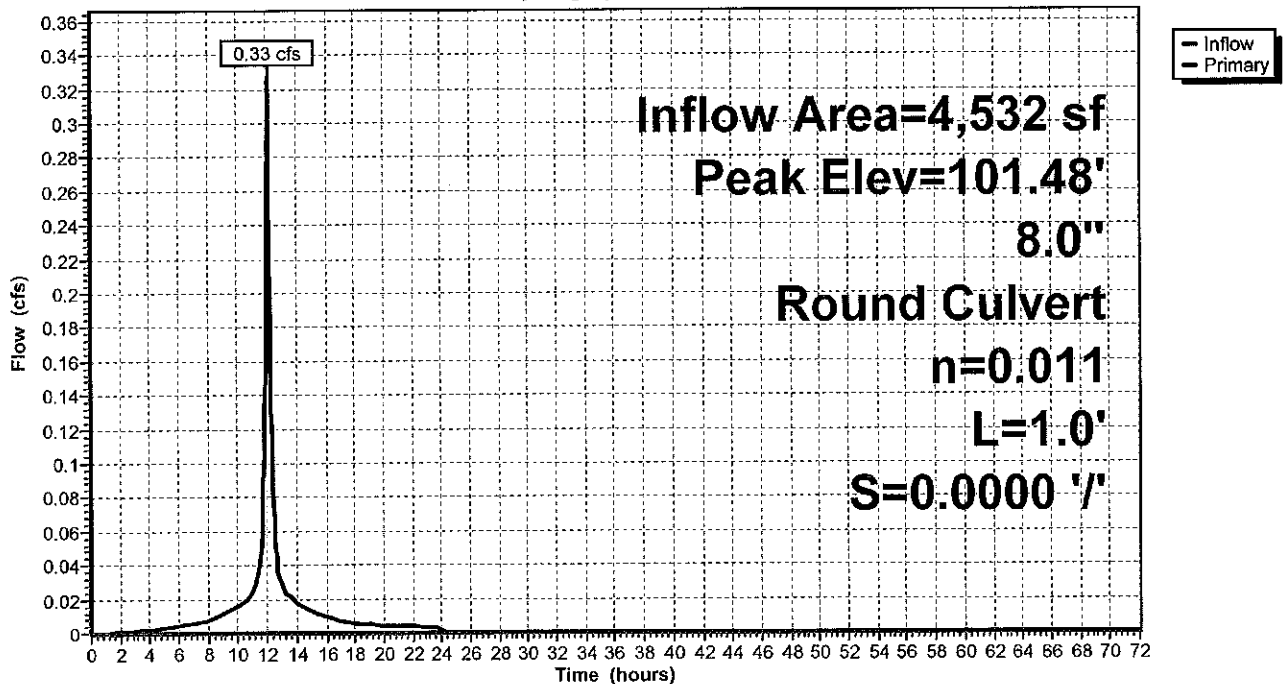
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Peak Elev= 101.48' @ 12.11 hrs  
 Flood Elev= 104.70'

| Device | Routing | Invert  | Outlet Devices  |
|--------|---------|---------|---|
| #1     | Primary | 101.05' | 8.0" Round Culvert L= 1.0' CPP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 101.05' / 101.05' S= 0.0000 '/' Cc= 0.900<br>n= 0.011, Flow Area= 0.35 sf |

Primary OutFlow Max=0.28 cfs @ 12.09 hrs HW=101.47' TW=101.40' (Dynamic Tailwater)  
 1=Culvert (Outlet Controls 0.28 cfs @ 1.69 fps)

**Pond PCB: Proposed CB to DP**

Hydrograph





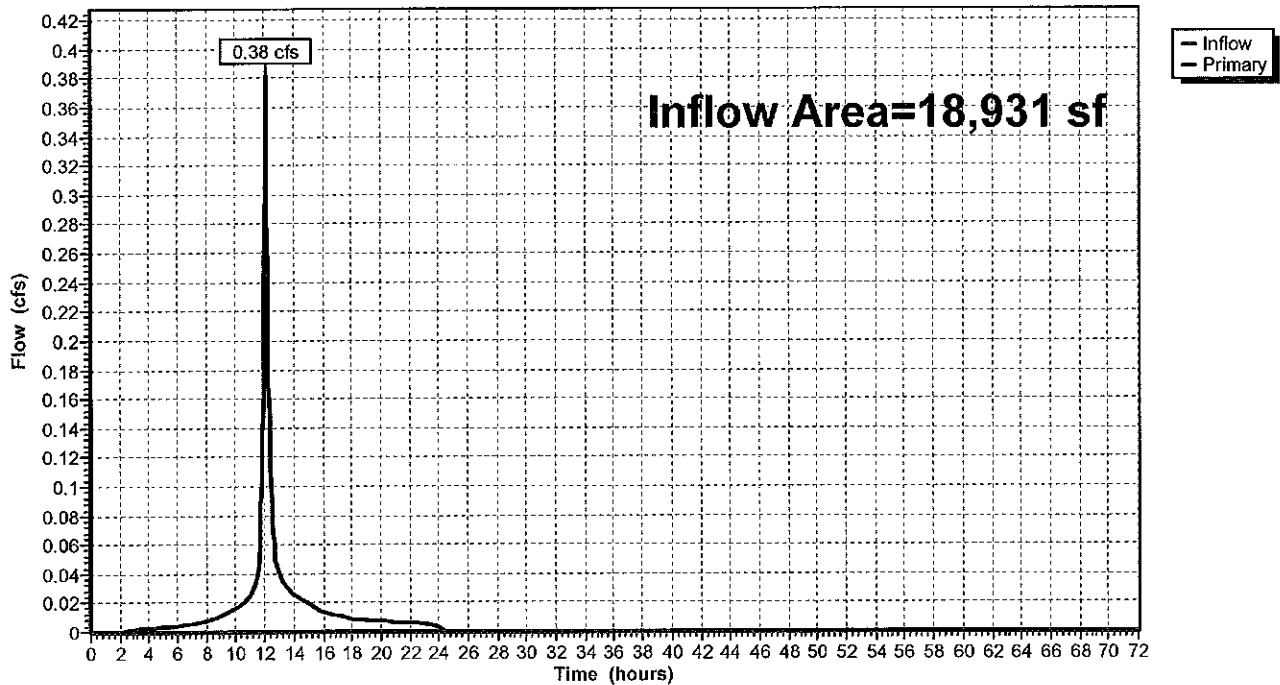
### Summary for Link DP1: Green Street CB

Inflow Area = 18,931 sf, 81.39% Impervious, Inflow Depth = 0.90" for 2 Year event  
Inflow = 0.38 cfs @ 12.09 hrs, Volume= 1,419 cf  
Primary = 0.38 cfs @ 12.09 hrs, Volume= 1,419 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

### Link DP1: Green Street CB

Hydrograph



**PROPOSED REA0149**

Type III 24-hr 10 Year Rainfall=5.22"

Prepared by {enter your company name here}

Printed 11/23/2022

HydroCAD® 10.10-6a s/n 03206 © 2020 HydroCAD Software Solutions LLC

Page 15

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points  
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment SC2.1: PROPOSED ROOF** Runoff Area=8,600 sf 100.00% Impervious Runoff Depth=4.98"  
Tc=6.0 min CN=98 Runoff=0.98 cfs 3,571 cf

**Subcatchment SC2.2: PARKING TO CB** Runoff Area=4,532 sf 100.00% Impervious Runoff Depth=4.98"  
Tc=6.0 min CN=98 Runoff=0.52 cfs 1,882 cf

**Subcatchment SC2.3: SHEET TO GREEN** Runoff Area=5,283 sf 39.18% Impervious Runoff Depth=1.58"  
Tc=6.0 min CN=62 Runoff=0.21 cfs 694 cf

**Subcatchment SC2.4: TO HAVEN STREET** Runoff Area=516 sf 39.92% Impervious Runoff Depth=1.65"  
Tc=6.0 min CN=63 Runoff=0.02 cfs 71 cf

**Pond CB: HAVEN STREET DRAINAGE** Peak Elev=102.25' Inflow=0.02 cfs 71 cf  
6.0" Round Culvert n=0.011 L=174.0' S=0.0053 '/' Outflow=0.02 cfs 71 cf

**Pond DMH: DMH** Peak Elev=101.53' Inflow=0.54 cfs 1,953 cf  
8.0" Round Culvert n=0.011 L=89.0' S=0.0053 '/' Outflow=0.54 cfs 1,953 cf

**Pond INF: Stormtech SC-310** Peak Elev=102.00' Storage=701 cf Inflow=0.98 cfs 3,571 cf  
Discarded=0.23 cfs 3,573 cf Primary=0.00 cfs 0 cf Outflow=0.23 cfs 3,573 cf

**Pond PCB: Proposed CB to DP** Peak Elev=101.62' Inflow=0.52 cfs 1,882 cf  
8.0" Round Culvert n=0.011 L=1.0' S=0.0000 '/' Outflow=0.52 cfs 1,882 cf

**Link DP1: Green Street CB** Inflow=0.74 cfs 2,647 cf  
Primary=0.74 cfs 2,647 cf

**Total Runoff Area = 18,931 sf Runoff Volume = 6,218 cf Average Runoff Depth = 3.94"**  
**18.61% Pervious = 3,523 sf 81.39% Impervious = 15,408 sf**

**PROPOSED REA0149**

Type III 24-hr 10 Year Rainfall=5.22"

Prepared by {enter your company name here}

Printed 11/23/2022

HydroCAD® 10.10-6a s/n 03206 © 2020 HydroCAD Software Solutions LLC

Page 16

**Summary for Subcatchment SC2.1: PROPOSED ROOF**

Runoff = 0.98 cfs @ 12.09 hrs, Volume= 3,571 cf, Depth= 4.98"  
Routed to Pond INF : Stormtech SC-310

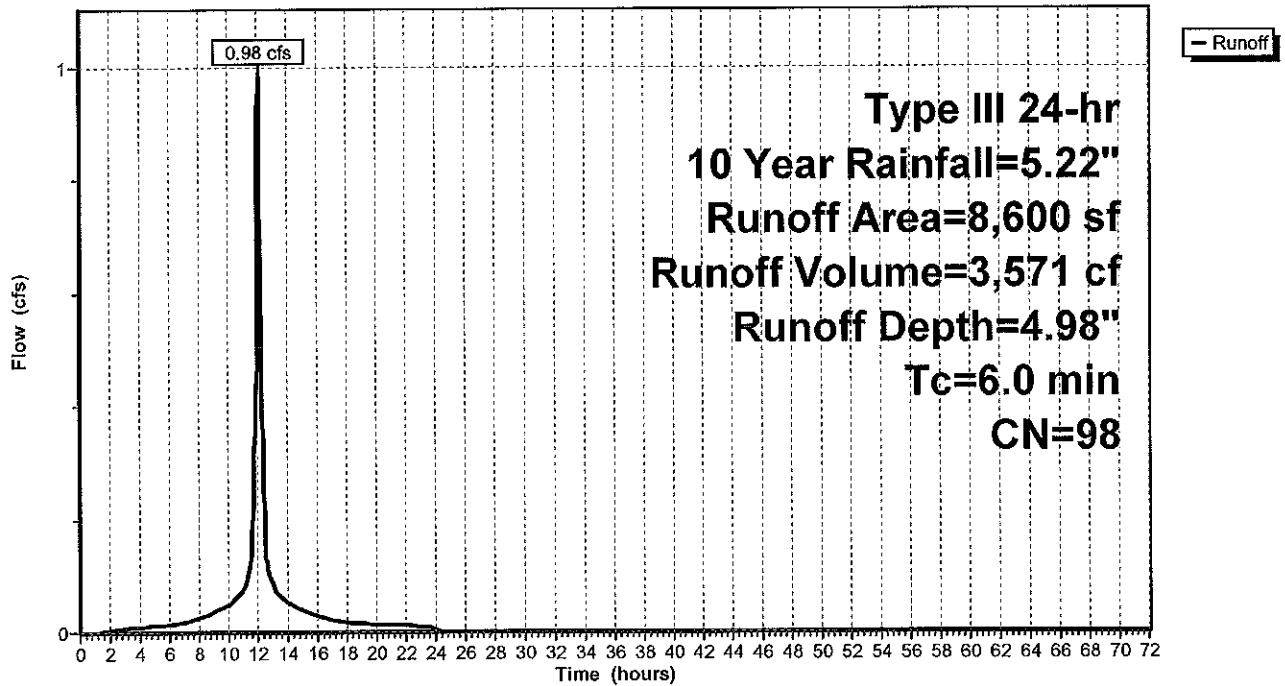
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
Type III 24-hr 10 Year Rainfall=5.22"

| Area (sf) | CN | Description              |
|-----------|----|--------------------------|
| * 8,600   | 98 | Unconnected roofs, HSG A |
| 8,600     |    | 100.00% Impervious Area  |
| 8,600     |    | 100.00% Unconnected      |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 6.0      |               |               |                   |                | Direct Entry, |

**Subcatchment SC2.1: PROPOSED ROOF**

Hydrograph





**PROPOSED REA0149**

Type III 24-hr 10 Year Rainfall=5.22"

Prepared by {enter your company name here}

Printed 11/23/2022

HydroCAD® 10.10-6a s/n 03206 © 2020 HydroCAD Software Solutions LLC

Page 17

**Summary for Subcatchment SC2.2: PARKING TO CB**

Runoff = 0.52 cfs @ 12.09 hrs, Volume= 1,882 cf, Depth= 4.98"  
 Routed to Pond PCB : Proposed CB to DP

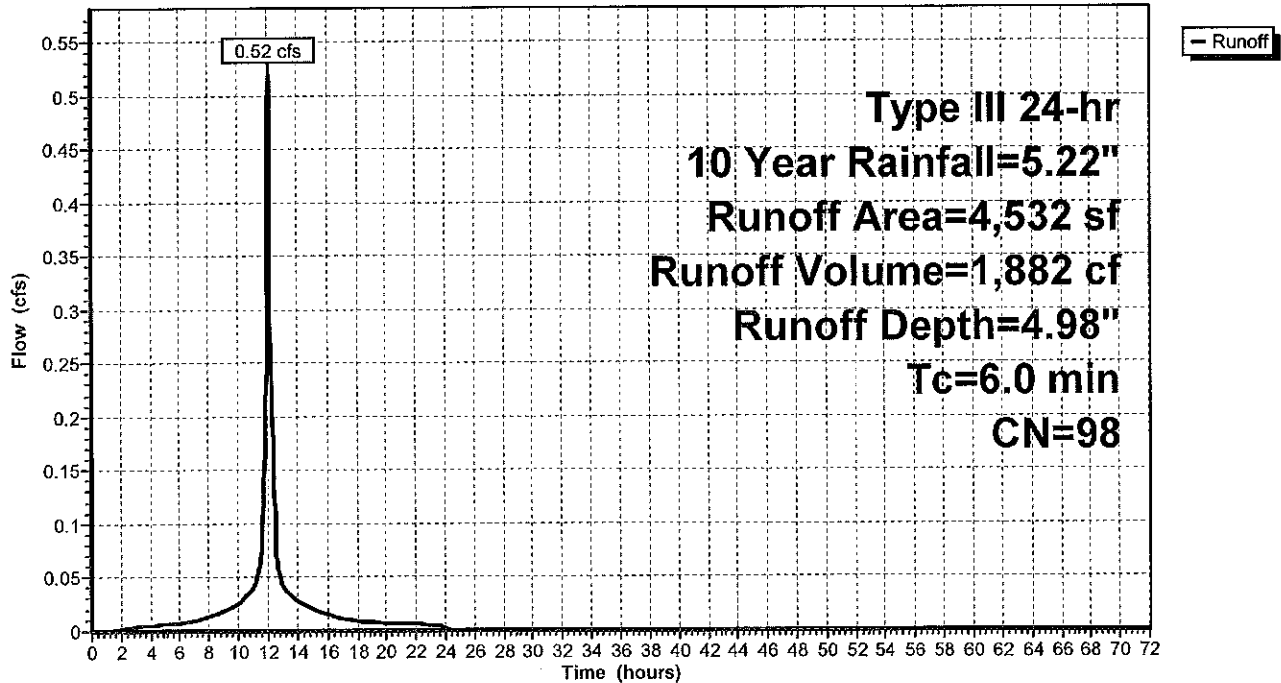
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 10 Year Rainfall=5.22"

| Area (sf) | CN | Description             |
|-----------|----|-------------------------|
| * 4,315   | 98 | Paved parking, HSG A    |
| * 217     | 98 | Concrete, HSG A         |
| 4,532     | 98 | Weighted Average        |
| 4,532     |    | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 6.0      |               |               |                   |                | Direct Entry, |

**Subcatchment SC2.2: PARKING TO CB**

Hydrograph



**PROPOSED REA0149**

Type III 24-hr 10 Year Rainfall=5.22"

Prepared by {enter your company name here}

Printed 11/23/2022

HydroCAD® 10.10-6a s/n 03206 © 2020 HydroCAD Software Solutions LLC

Page 18

**Summary for Subcatchment SC2.3: SHEET TO GREEN STREET**

Runoff = 0.21 cfs @ 12.10 hrs, Volume= 694 cf, Depth= 1.58"  
 Routed to Link DP1 : Green Street CB

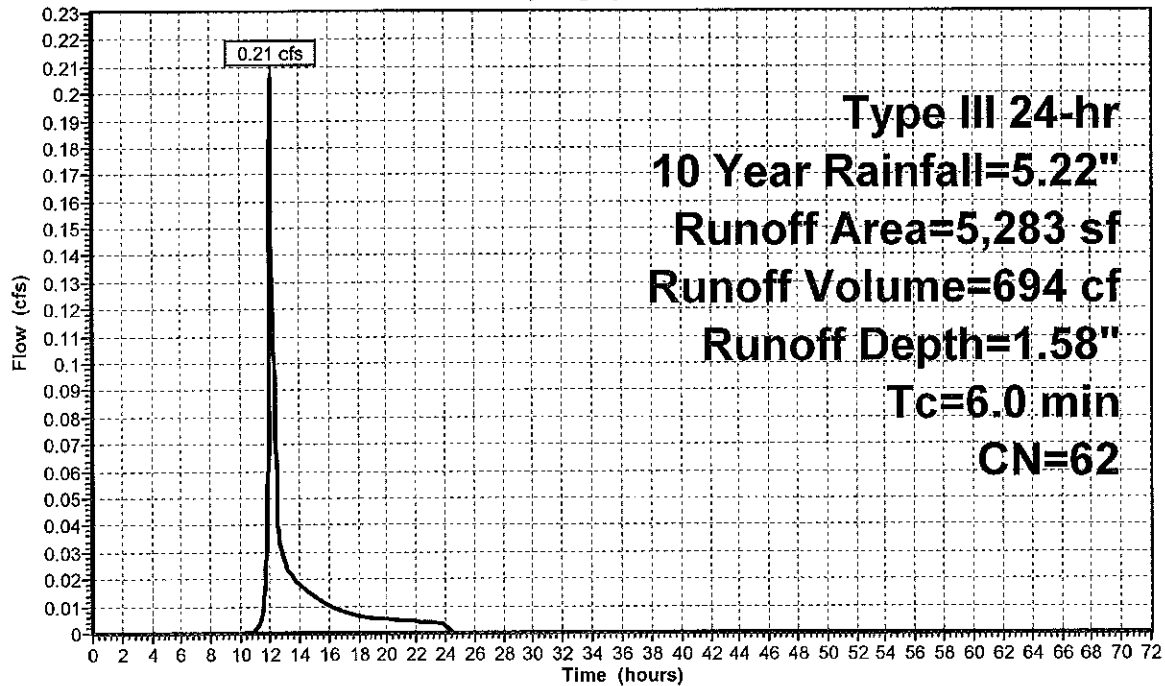
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 10 Year Rainfall=5.22"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 3,213     | 39 | >75% Grass cover, Good, HSG A |
| * 2,070   | 98 | Concrete, HSG A               |
| 5,283     | 62 | Weighted Average              |
| 3,213     |    | 60.82% Pervious Area          |
| 2,070     |    | 39.18% Impervious Area        |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 6.0      |               |               |                   |                | Direct Entry, |

**Subcatchment SC2.3: SHEET TO GREEN STREET**

Hydrograph



**PROPOSED REA0149**

Type III 24-hr 10 Year Rainfall=5.22"

Prepared by {enter your company name here}

Printed 11/23/2022

HydroCAD® 10.10-6a s/n 03206 © 2020 HydroCAD Software Solutions LLC

Page 19

**Summary for Subcatchment SC2.4: TO HAVEN STREET**

Runoff = 0.02 cfs @ 12.10 hrs, Volume= 71 cf, Depth= 1.65"  
 Routed to Pond CB : HAVEN STREET DRAINAGE

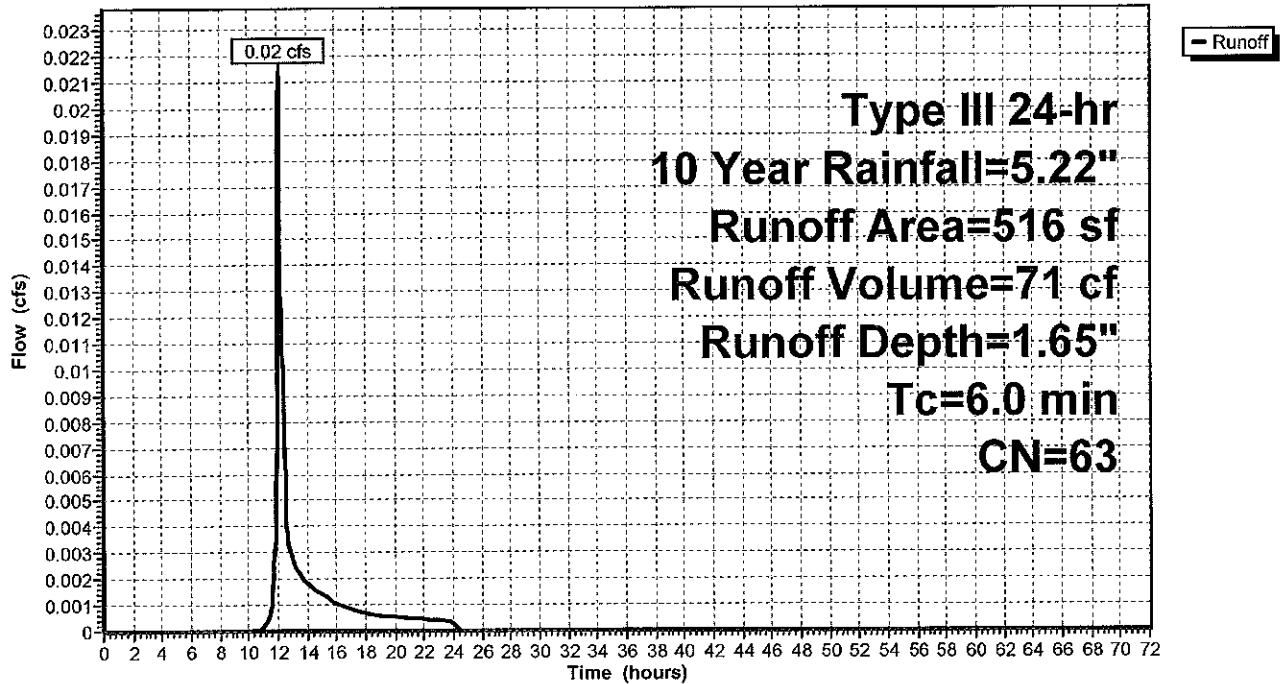
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 10 Year Rainfall=5.22"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 310       | 39 | >75% Grass cover, Good, HSG A |
| * 206     | 98 | Concrete, HSG A               |
| 516       | 63 | Weighted Average              |
| 310       |    | 60.08% Pervious Area          |
| 206       |    | 39.92% Impervious Area        |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 6.0      |               |               |                   |                | Direct Entry, |

**Subcatchment SC2.4: TO HAVEN STREET**

Hydrograph





**PROPOSED REA0149**

Type III 24-hr 10 Year Rainfall=5.22"

Prepared by {enter your company name here}

Printed 11/23/2022

HydroCAD® 10.10-6a s/n 03206 © 2020 HydroCAD Software Solutions LLC

Page 20

**Summary for Pond CB: HAVEN STREET DRAINAGE**

Inflow Area = 516 sf, 39.92% Impervious, Inflow Depth = 1.65" for 10 Year event  
 Inflow = 0.02 cfs @ 12.10 hrs, Volume= 71 cf  
 Outflow = 0.02 cfs @ 12.10 hrs, Volume= 71 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 0.02 cfs @ 12.10 hrs, Volume= 71 cf  
 Routed to Pond DMH : DMH

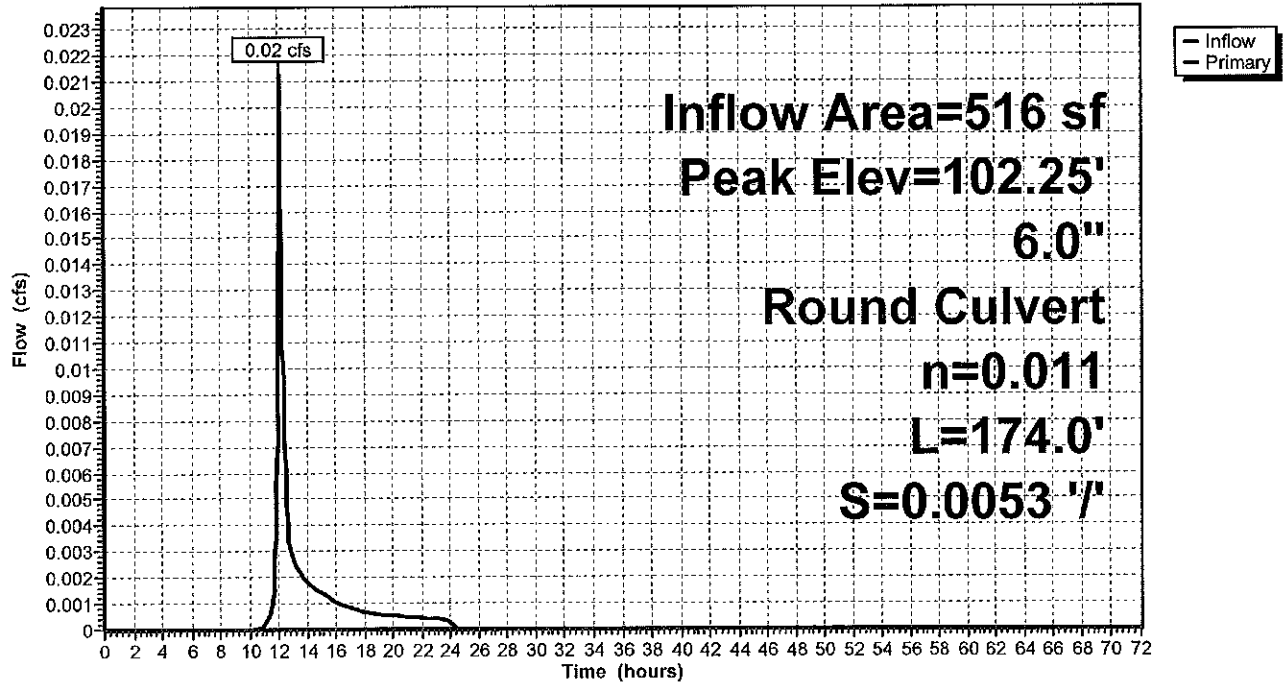
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Peak Elev= 102.25' @ 12.11 hrs  
 Flood Elev= 104.55'

| Device | Routing | Invert  | Outlet Devices   |
|--------|---------|---------|--|
| #1     | Primary | 102.15' | <b>6.0" Round Culvert</b><br>L= 174.0' CPP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 102.15' / 101.22' S= 0.0053 '/ Cc= 0.900<br>n= 0.011, Flow Area= 0.20 sf |

Primary OutFlow Max=0.02 cfs @ 12.10 hrs HW=102.25' TW=101.52' (Dynamic Tailwater)  
 ↑1=Culvert (Outlet Controls 0.02 cfs @ 1.11 fps)

**Pond CB: HAVEN STREET DRAINAGE**

Hydrograph



**PROPOSED REA0149**

Type III 24-hr 10 Year Rainfall=5.22"

Prepared by {enter your company name here}

Printed 11/23/2022

HydroCAD® 10.10-6a s/n 03206 © 2020 HydroCAD Software Solutions LLC

Page 21

**Summary for Pond DMH: DMH**

Inflow Area = 5,048 sf, 93.86% Impervious, Inflow Depth = 4.64" for 10 Year event  
 Inflow = 0.54 cfs @ 12.09 hrs, Volume= 1,953 cf  
 Outflow = 0.54 cfs @ 12.09 hrs, Volume= 1,953 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 0.54 cfs @ 12.09 hrs, Volume= 1,953 cf  
 Routed to Link DP1 : Green Street CB

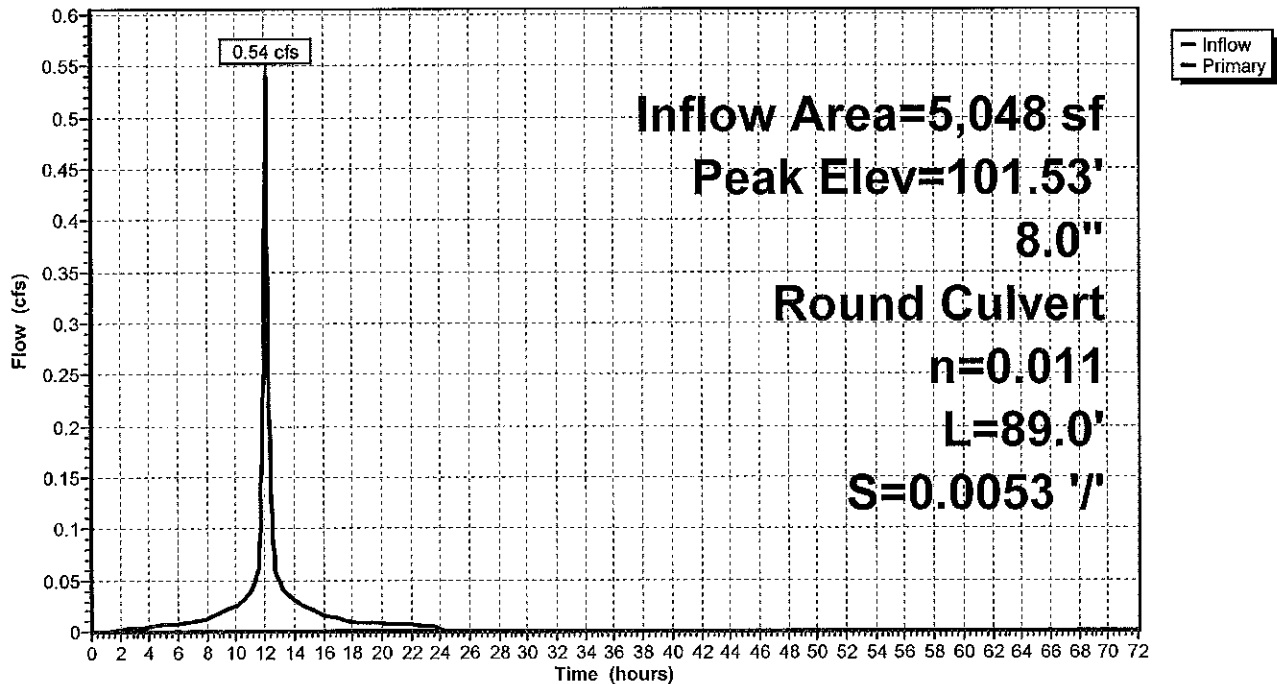
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Peak Elev= 101.53' @ 12.09 hrs  
 Flood Elev= 105.10'

| Device | Routing | Invert  | Outlet Devices  |
|--------|---------|---------|---|
| #1     | Primary | 101.05' | <b>8.0" Round Culvert</b><br>L= 89.0' CPP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 101.05' / 100.58' S= 0.0053 '/ Cc= 0.900<br>n= 0.011, Flow Area= 0.35 sf |

**Primary OutFlow** Max=0.53 cfs @ 12.09 hrs HW=101.52' TW=0.00' (Dynamic Tailwater)  
 ↑1=Culvert (Barrel Controls 0.53 cfs @ 2.81 fps)

**Pond DMH: DMH**

Hydrograph



**PROPOSED REA0149**

Type III 24-hr 10 Year Rainfall=5.22"

Prepared by {enter your company name here}

Printed 11/23/2022

HydroCAD® 10.10-6a s/n 03206 © 2020 HydroCAD Software Solutions LLC

Page 22

**Summary for Pond INF: Stormtech SC-310**

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=102)

Inflow Area = 8,600 sf, 100.00% Impervious, Inflow Depth = 4.98" for 10 Year event  
 Inflow = 0.98 cfs @ 12.09 hrs, Volume= 3,571 cf  
 Outflow = 0.23 cfs @ 11.80 hrs, Volume= 3,573 cf, Atten= 76%, Lag= 0.0 min  
 Discarded = 0.23 cfs @ 11.80 hrs, Volume= 3,573 cf  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf  
 Routed to Link DP1 : Green Street CB

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Peak Elev= 102.00' @ 12.47 hrs Surf.Area= 1,222 sf Storage= 701 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)  
 Center-of-Mass det. time= 13.7 min ( 761.0 - 747.3 )

| Volume | Invert  | Avail.Storage | Storage Description  |
|--------|---------|---------------|--|
| #1A    | 101.00' | 875 cf        | <b>18.17'W x 67.28'L x 2.33'H Field A</b><br>2,852 cf Overall - 663 cf Embedded = 2,189 cf x 40.0% Voids   |
| #2A    | 101.50' | 663 cf        | <b>ADS_StormTech SC-310 +Cap x 45 Inside #1</b><br>Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf<br>Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap<br>45 Chambers in 5 Rows |
|        |         | 1,539 cf      | Total Available Storage  |

Storage Group A created with Chamber Wizard

| Device | Routing   | Invert  | Outlet Devices   |
|--------|-----------|---------|--|
| #1     | Discarded | 101.00' | <b>8.270 in/hr Exfiltration over Surface area</b>  |
| #2     | Primary   | 102.50' | <b>6.0" Round Culvert</b><br>L= 26.0' CPP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 102.50' / 101.05' S= 0.0558 '/' Cc= 0.900<br>n= 0.011, Flow Area= 0.20 sf |

Discarded OutFlow Max=0.23 cfs @ 11.80 hrs HW=101.03' (Free Discharge)

↑-1=Exfiltration (Exfiltration Controls 0.23 cfs)

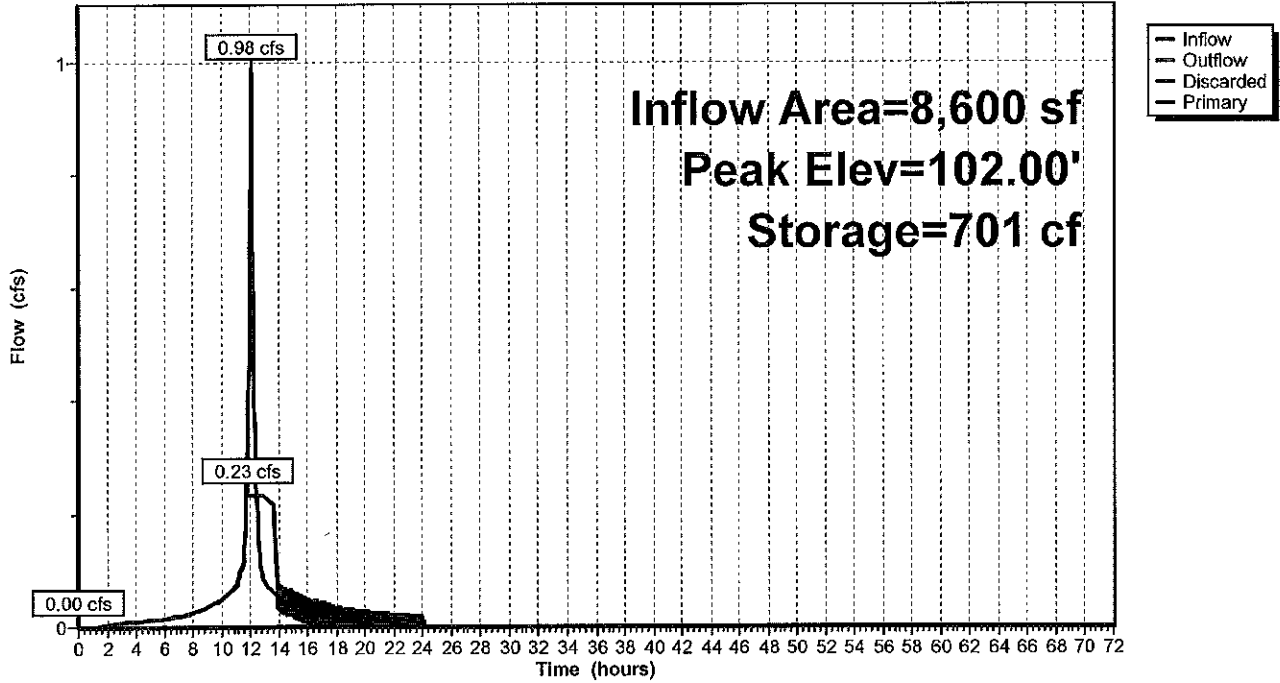
Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=101.00' TW=0.00' (Dynamic Tailwater)

↑-2=Culvert ( Controls 0.00 cfs)



Pond INF: Stormtech SC-310

Hydrograph



**PROPOSED REA0149**

Type III 24-hr 10 Year Rainfall=5.22"

Prepared by {enter your company name here}

Printed 11/23/2022

HydroCAD® 10.10-6a s/n 03206 © 2020 HydroCAD Software Solutions LLC

Page 24

**Summary for Pond PCB: Proposed CB to DP**

Inflow Area = 4,532 sf, 100.00% Impervious, Inflow Depth = 4.98" for 10 Year event  
 Inflow = 0.52 cfs @ 12.09 hrs, Volume= 1,882 cf  
 Outflow = 0.52 cfs @ 12.09 hrs, Volume= 1,882 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 0.52 cfs @ 12.09 hrs, Volume= 1,882 cf  
 Routed to Pond DMH : DMH

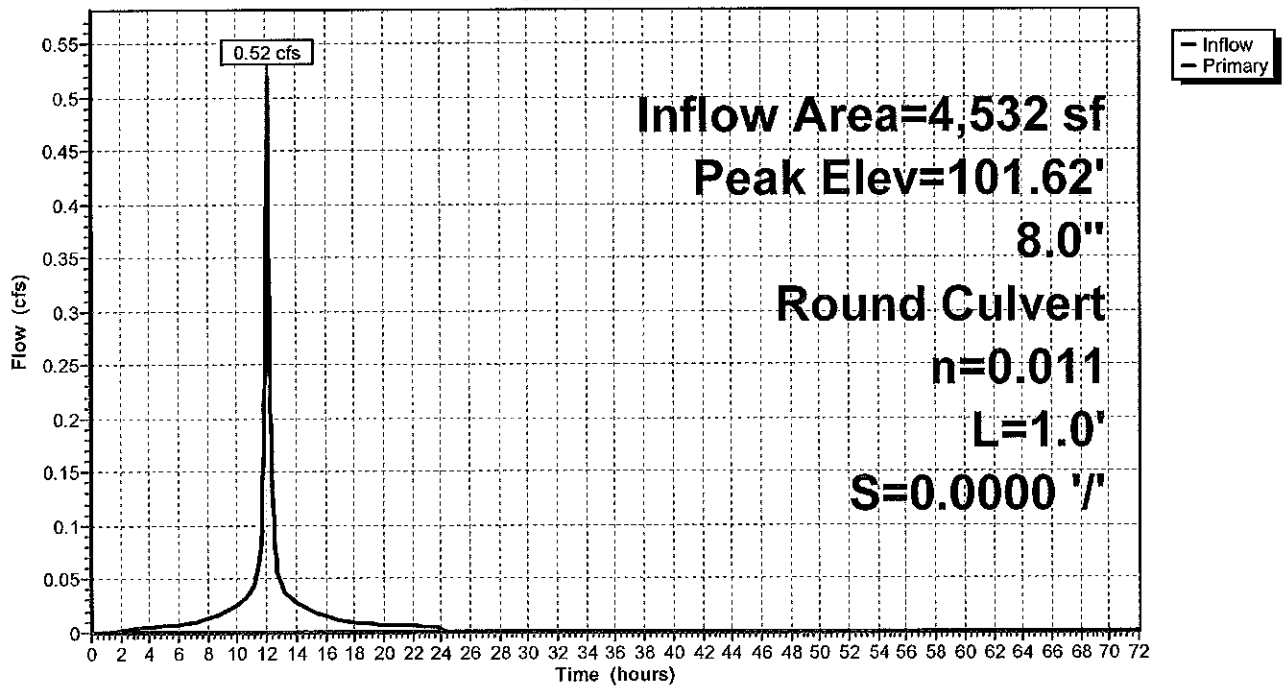
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Peak Elev= 101.62' @ 12.11 hrs  
 Flood Elev= 104.70'

| Device | Routing | Invert  | Outlet Devices   |
|--------|---------|---------|--|
| #1     | Primary | 101.05' | 8.0" Round Culvert L= 1.0' CPP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 101.05' / 101.05' S= 0.0000 '/ Cc= 0.900<br>n= 0.011, Flow Area= 0.35 sf |

Primary OutFlow Max=0.43 cfs @ 12.09 hrs HW=101.60' TW=101.52' (Dynamic Tailwater)  
 ←1=Culvert (Outlet Controls 0.43 cfs @ 1.87 fps)

**Pond PCB: Proposed CB to DP**

Hydrograph



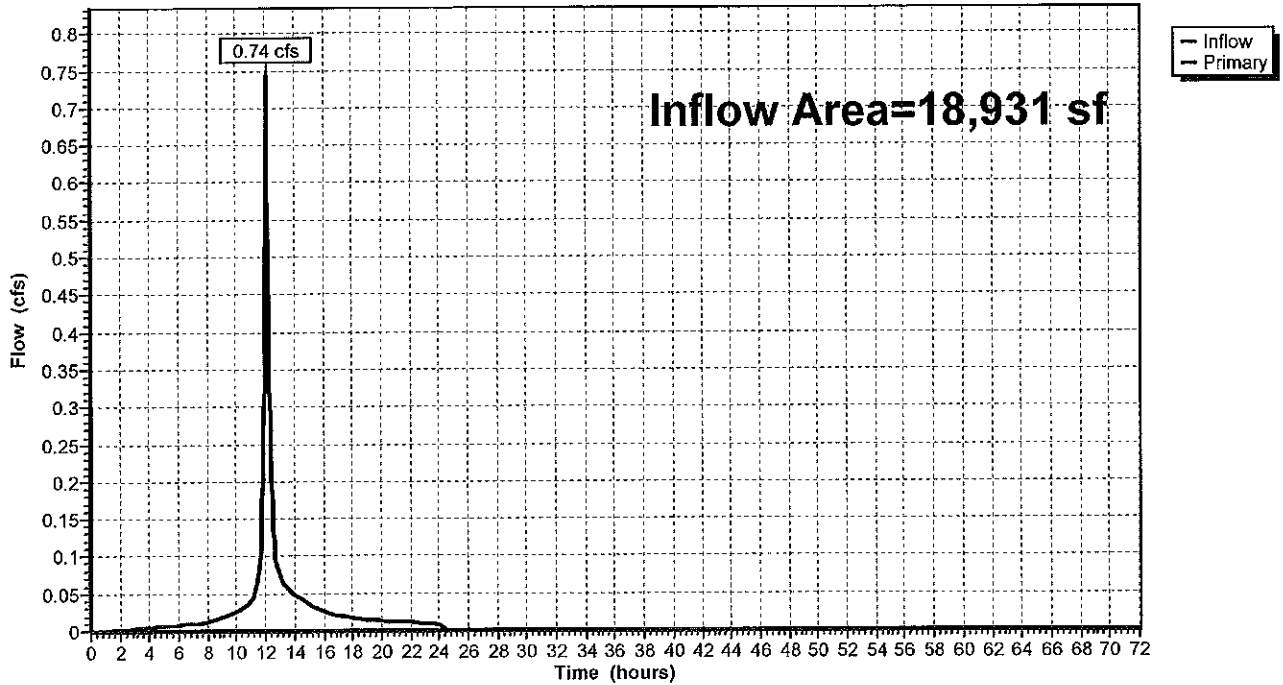
Summary for Link DP1: Green Street CB

Inflow Area = 18,931 sf, 81.39% Impervious, Inflow Depth = 1.68" for 10 Year event  
Inflow = 0.74 cfs @ 12.09 hrs, Volume= 2,647 cf  
Primary = 0.74 cfs @ 12.09 hrs, Volume= 2,647 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link DP1: Green Street CB

Hydrograph





**PROPOSED REA0149**

Type III 24-hr 25 Year Rainfall=6.41"

Prepared by {enter your company name here}

Printed 11/23/2022

HydroCAD® 10.10-6a s/n 03206 © 2020 HydroCAD Software Solutions LLC

Page 26

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points  
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment SC2.1: PROPOSED ROOF** Runoff Area=8,600 sf 100.00% Impervious Runoff Depth=6.17"  
Tc=6.0 min CN=98 Runoff=1.21 cfs 4,423 cf

**Subcatchment SC2.2: PARKING TO CB** Runoff Area=4,532 sf 100.00% Impervious Runoff Depth=6.17"  
Tc=6.0 min CN=98 Runoff=0.64 cfs 2,331 cf

**Subcatchment SC2.3: SHEET TO GREEN** Runoff Area=5,283 sf 39.18% Impervious Runoff Depth=2.38"  
Tc=6.0 min CN=62 Runoff=0.32 cfs 1,046 cf

**Subcatchment SC2.4: TO HAVEN STREET** Runoff Area=516 sf 39.92% Impervious Runoff Depth=2.47"  
Tc=6.0 min CN=63 Runoff=0.03 cfs 106 cf

**Pond CB: HAVEN STREET DRAINAGE** Peak Elev=102.28' Inflow=0.03 cfs 106 cf  
6.0" Round Culvert n=0.011 L=174.0' S=0.0053 '/' Outflow=0.03 cfs 106 cf

**Pond DMH: DMH** Peak Elev=101.60' Inflow=0.67 cfs 2,437 cf  
8.0" Round Culvert n=0.011 L=89.0' S=0.0053 '/' Outflow=0.67 cfs 2,437 cf

**Pond INF: Stormtech SC-310** Peak Elev=102.38' Storage=1,019 cf Inflow=1.21 cfs 4,423 cf  
Discarded=0.23 cfs 4,433 cf Primary=0.00 cfs 0 cf Outflow=0.23 cfs 4,433 cf

**Pond PCB: Proposed CB to DP** Peak Elev=101.72' Inflow=0.64 cfs 2,331 cf  
8.0" Round Culvert n=0.011 L=1.0' S=0.0000 '/' Outflow=0.64 cfs 2,331 cf

**Link DP1: Green Street CB** Inflow=0.99 cfs 3,483 cf  
Primary=0.99 cfs 3,483 cf

**Total Runoff Area = 18,931 sf Runoff Volume = 7,906 cf Average Runoff Depth = 5.01"**  
**18.61% Pervious = 3,523 sf 81.39% Impervious = 15,408 sf**

**PROPOSED REA0149**

Type III 24-hr 25 Year Rainfall=6.41"

Prepared by {enter your company name here}

Printed 11/23/2022

HydroCAD® 10.10-6a s/n 03206 © 2020 HydroCAD Software Solutions LLC

Page 27

**Summary for Subcatchment SC2.1: PROPOSED ROOF**

Runoff = 1.21 cfs @ 12.09 hrs, Volume= 4,423 cf, Depth= 6.17"  
 Routed to Pond INF : Stormtech SC-310

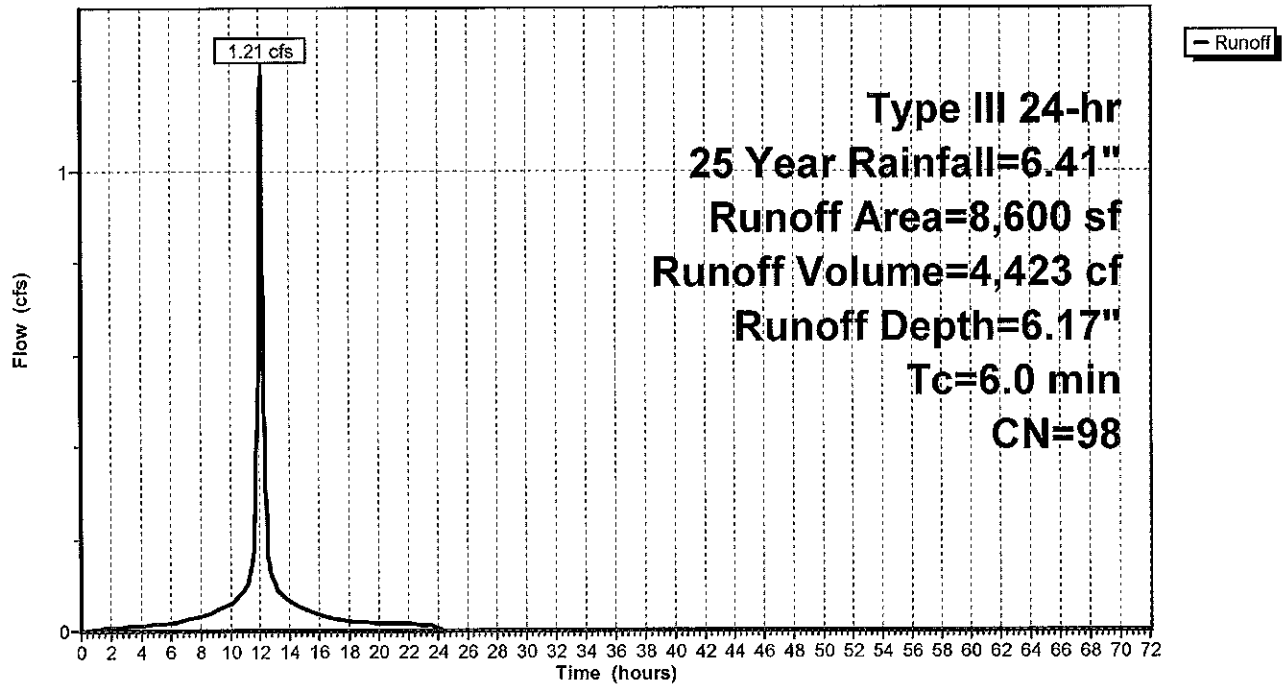
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 25 Year Rainfall=6.41"

| Area (sf) | CN | Description              |
|-----------|----|--------------------------|
| * 8,600   | 98 | Unconnected roofs, HSG A |
| 8,600     |    | 100.00% Impervious Area  |
| 8,600     |    | 100.00% Unconnected      |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 6.0      |               |               |                   |                | Direct Entry, |

**Subcatchment SC2.1: PROPOSED ROOF**

Hydrograph



**PROPOSED REA0149**

Type III 24-hr 25 Year Rainfall=6.41"

Prepared by {enter your company name here}

Printed 11/23/2022

HydroCAD® 10.10-6a s/n 03206 © 2020 HydroCAD Software Solutions LLC

Page 28

**Summary for Subcatchment SC2.2: PARKING TO CB**

Runoff = 0.64 cfs @ 12.09 hrs, Volume= 2,331 cf, Depth= 6.17"  
 Routed to Pond PCB : Proposed CB to DP

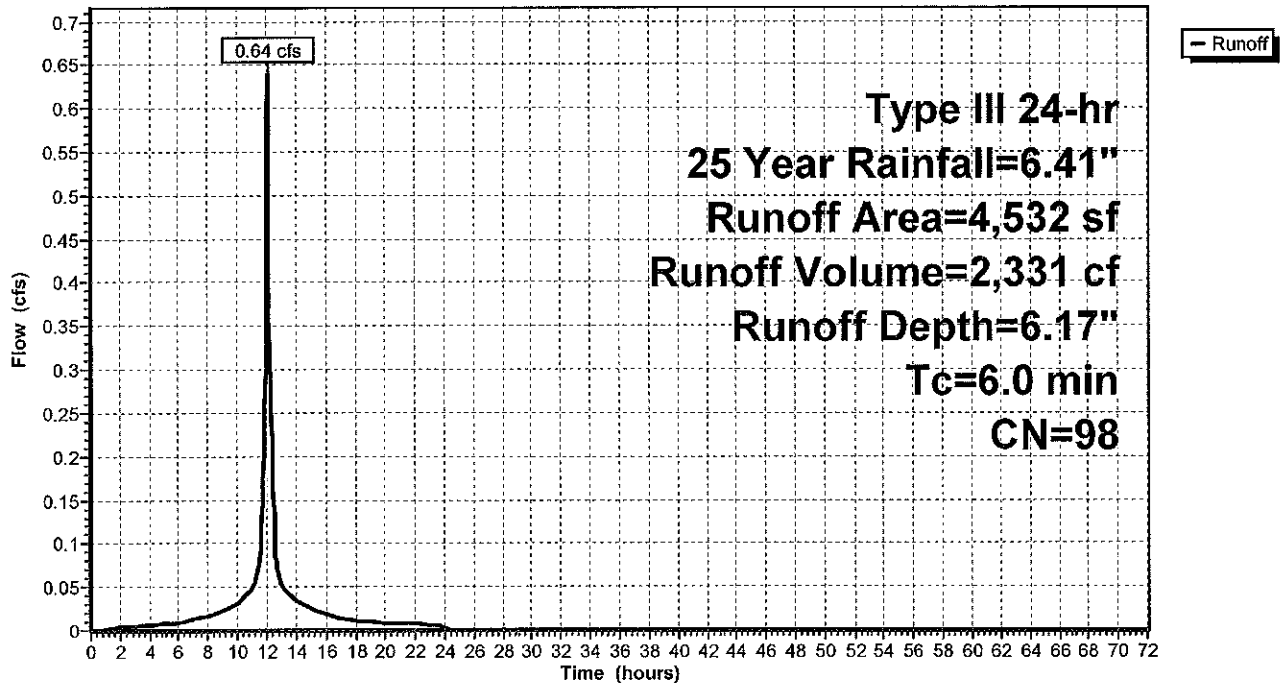
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 25 Year Rainfall=6.41"

|   | Area (sf) | CN | Description             |
|---|-----------|----|-------------------------|
| * | 4,315     | 98 | Paved parking, HSG A    |
| * | 217       | 98 | Concrete, HSG A         |
|   | 4,532     | 98 | Weighted Average        |
|   | 4,532     |    | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 6.0      |               |               |                   |                | Direct Entry, |

**Subcatchment SC2.2: PARKING TO CB**

Hydrograph





**PROPOSED REA0149**

Type III 24-hr 25 Year Rainfall=6.41"

Prepared by {enter your company name here}

Printed 11/23/2022

HydroCAD® 10.10-6a s/n 03206 © 2020 HydroCAD Software Solutions LLC

Page 29

**Summary for Subcatchment SC2.3: SHEET TO GREEN STREET**

Runoff = 0.32 cfs @ 12.10 hrs, Volume= 1,046 cf, Depth= 2.38"  
 Routed to Link DP1 : Green Street CB

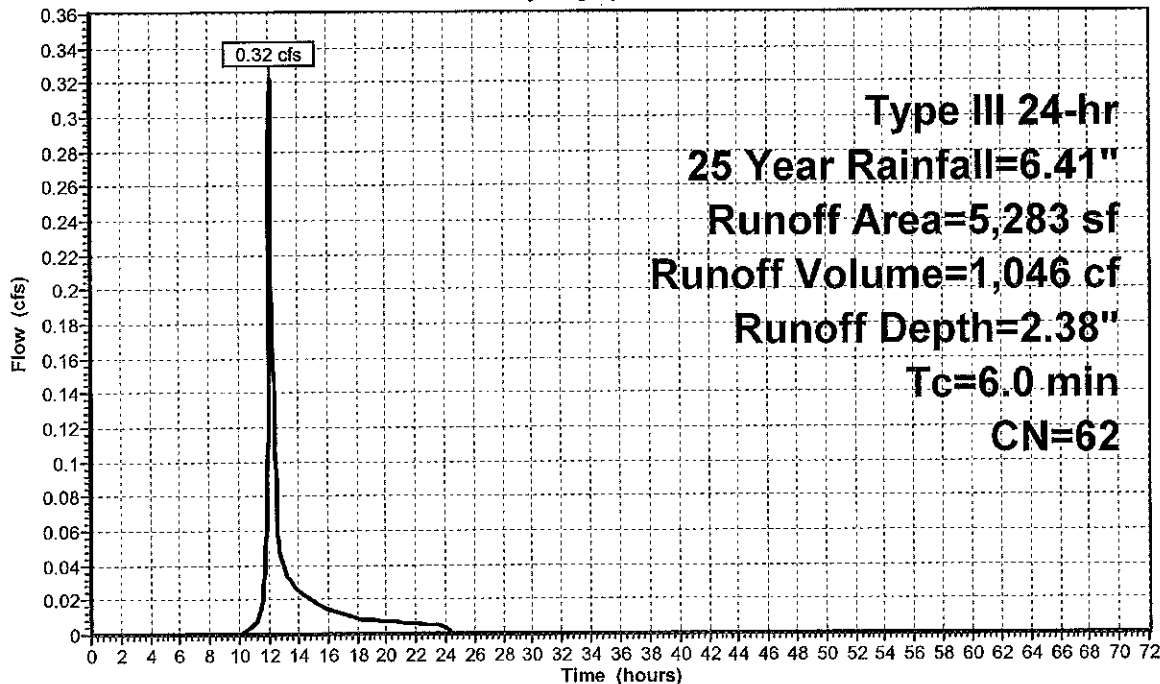
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 25 Year Rainfall=6.41"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 3,213     | 39 | >75% Grass cover, Good, HSG A |
| * 2,070   | 98 | Concrete, HSG A               |
| 5,283     | 62 | Weighted Average              |
| 3,213     |    | 60.82% Pervious Area          |
| 2,070     |    | 39.18% Impervious Area        |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 6.0      |               |               |                   |                | Direct Entry, |

**Subcatchment SC2.3: SHEET TO GREEN STREET**

Hydrograph



— Runoff

**PROPOSED REA0149**

Type III 24-hr 25 Year Rainfall=6.41"

Prepared by {enter your company name here}

Printed 11/23/2022

HydroCAD® 10.10-6a s/n 03206 © 2020 HydroCAD Software Solutions LLC

Page 30

**Summary for Subcatchment SC2.4: TO HAVEN STREET**

Runoff = 0.03 cfs @ 12.10 hrs, Volume= 106 cf, Depth= 2.47"  
 Routed to Pond CB : HAVEN STREET DRAINAGE

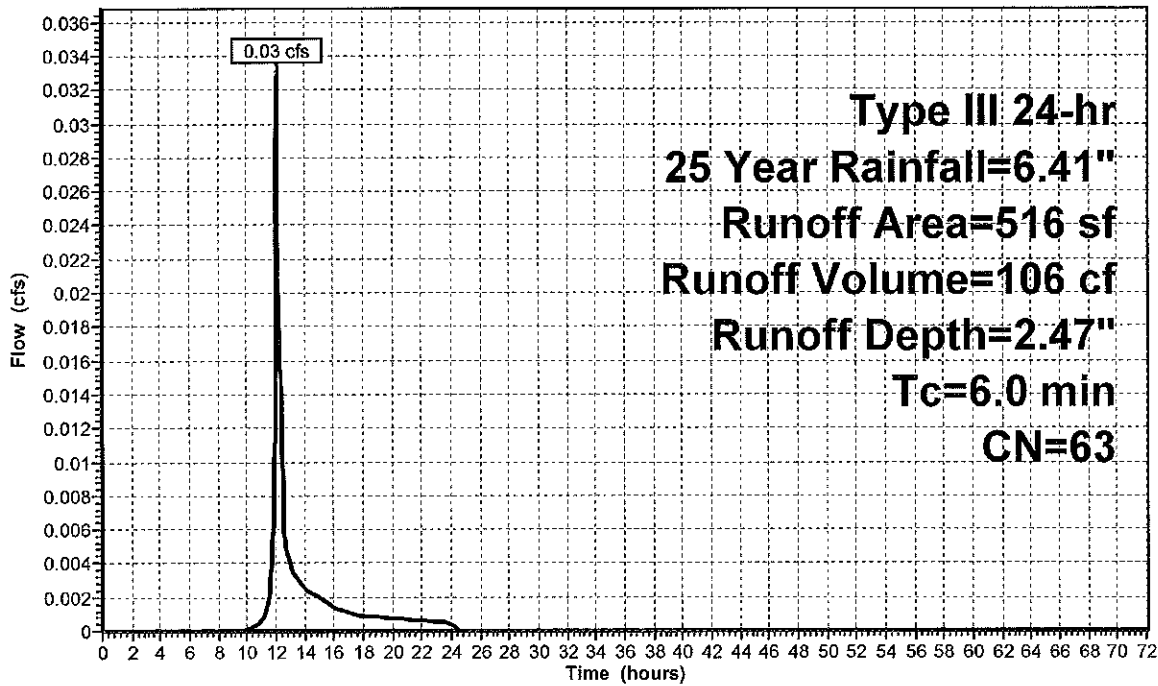
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 25 Year Rainfall=6.41"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 310       | 39 | >75% Grass cover, Good, HSG A |
| * 206     | 98 | Concrete, HSG A               |
| 516       | 63 | Weighted Average              |
| 310       |    | 60.08% Pervious Area          |
| 206       |    | 39.92% Impervious Area        |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 6.0      |               |               |                   |                | Direct Entry, |

**Subcatchment SC2.4: TO HAVEN STREET**

Hydrograph



**PROPOSED REA0149**

Type III 24-hr 25 Year Rainfall=6.41"

Prepared by {enter your company name here}

Printed 11/23/2022

HydroCAD® 10.10-6a s/n 03206 © 2020 HydroCAD Software Solutions LLC

Page 31

**Summary for Pond CB: HAVEN STREET DRAINAGE**

Inflow Area = 516 sf, 39.92% Impervious, Inflow Depth = 2.47" for 25 Year event  
 Inflow = 0.03 cfs @ 12.10 hrs, Volume= 106 cf  
 Outflow = 0.03 cfs @ 12.10 hrs, Volume= 106 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 0.03 cfs @ 12.10 hrs, Volume= 106 cf  
 Routed to Pond DMH : DMH

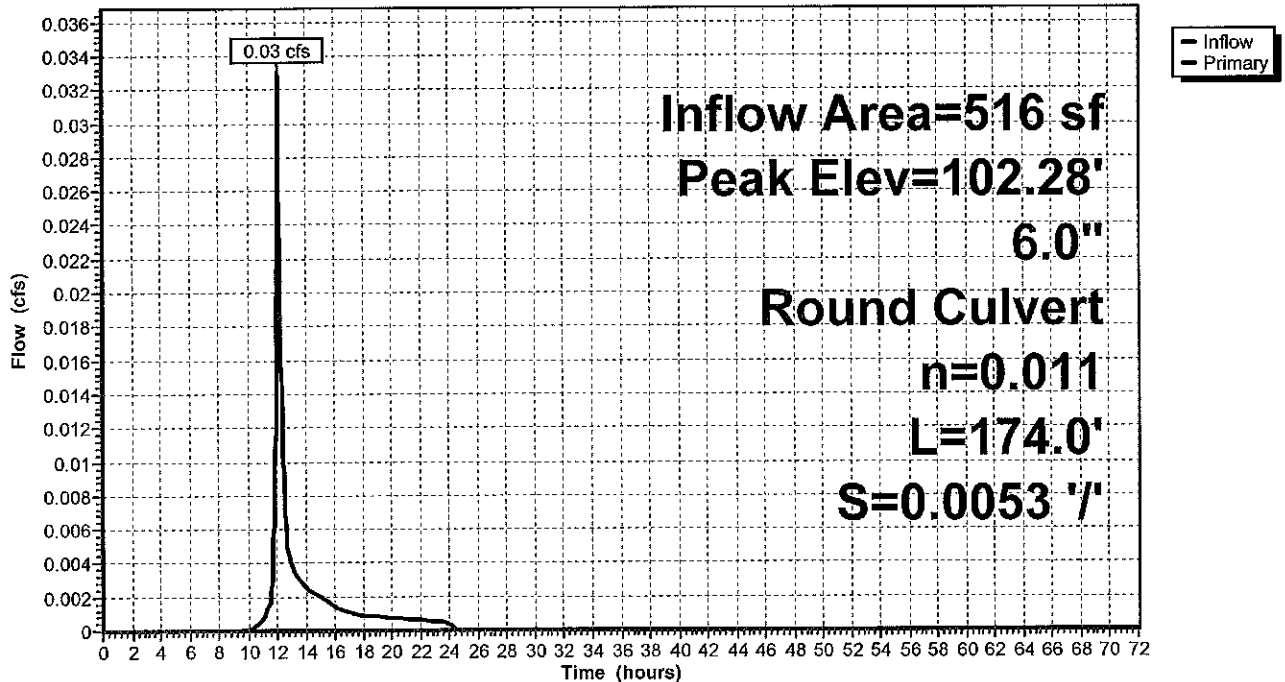
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Peak Elev= 102.28' @ 12.10 hrs  
 Flood Elev= 104.55'

| Device # | Routing | Invert  | Outlet Devices   |
|----------|---------|---------|--|
| #1       | Primary | 102.15' | <b>6.0" Round Culvert</b><br>L= 174.0' CPP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 102.15' / 101.22' S= 0.0053 '/ Cc= 0.900<br>n= 0.011, Flow Area= 0.20 sf |

Primary OutFlow Max=0.03 cfs @ 12.10 hrs HW=102.28' TW=101.59' (Dynamic Tailwater)  
 ←1=Culvert (Outlet Controls 0.03 cfs @ 1.23 fps)

**Pond CB: HAVEN STREET DRAINAGE**

Hydrograph





**PROPOSED REA0149**

Type III 24-hr 25 Year Rainfall=6.41"

Prepared by {enter your company name here}

Printed 11/23/2022

HydroCAD® 10.10-6a s/n 03206 © 2020 HydroCAD Software Solutions LLC

Page 32

**Summary for Pond DMH: DMH**

Inflow Area = 5,048 sf, 93.86% Impervious, Inflow Depth = 5.79" for 25 Year event  
 Inflow = 0.67 cfs @ 12.09 hrs, Volume= 2,437 cf  
 Outflow = 0.67 cfs @ 12.09 hrs, Volume= 2,437 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 0.67 cfs @ 12.09 hrs, Volume= 2,437 cf  
 Routed to Link DP1 : Green Street CB

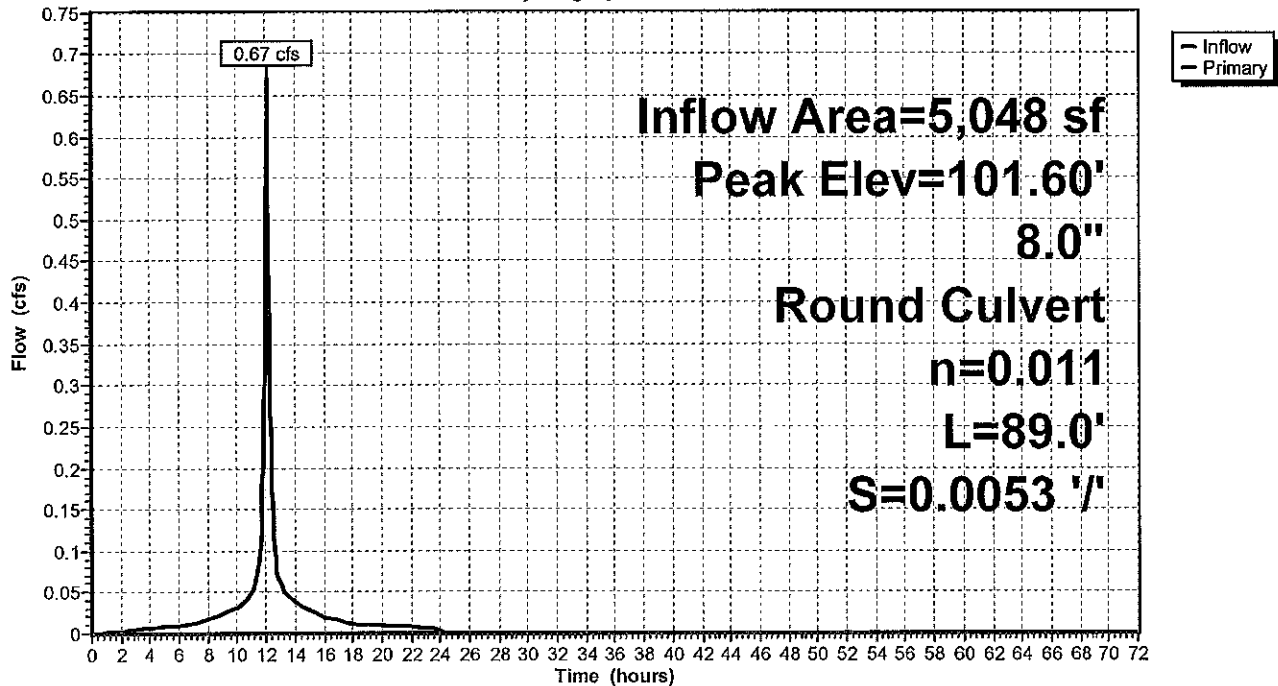
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Peak Elev= 101.60' @ 12.09 hrs  
 Flood Elev= 105.10'

| Device # | Routing | Invert  | Outlet Devices  |
|----------|---------|---------|---|
| #1       | Primary | 101.05' | <b>8.0" Round Culvert</b><br>L= 89.0' CPP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 101.05' / 100.58' S= 0.0053 '/ Cc= 0.900<br>n= 0.011, Flow Area= 0.35 sf |

**Primary OutFlow** Max=0.65 cfs @ 12.09 hrs HW=101.59' TW=0.00' (Dynamic Tailwater)  
 ←1=Culvert (Barrel Controls 0.65 cfs @ 2.95 fps)

**Pond DMH: DMH**

Hydrograph



**Summary for Pond INF: Stormtech SC-310**

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=95)

Inflow Area = 8,600 sf, 100.00% Impervious, Inflow Depth = 6.17" for 25 Year event  
 Inflow = 1.21 cfs @ 12.09 hrs, Volume= 4,423 cf  
 Outflow = 0.23 cfs @ 11.75 hrs, Volume= 4,433 cf, Atten= 81%, Lag= 0.0 min  
 Discarded = 0.23 cfs @ 11.75 hrs, Volume= 4,433 cf  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf  
 Routed to Link DP1 : Green Street CB

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Peak Elev= 102.38' @ 12.52 hrs Surf.Area= 1,222 sf Storage= 1,019 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)  
 Center-of-Mass det. time= 21.7 min ( 765.8 - 744.2 )

| Volume | Invert  | Avail.Storage | Storage Description  |
|--------|---------|---------------|--|
| #1A    | 101.00' | 875 cf        | <b>18.17'W x 67.28'L x 2.33'H Field A</b><br>2,852 cf Overall - 663 cf Embedded = 2,189 cf x 40.0% Voids   |
| #2A    | 101.50' | 663 cf        | <b>ADS_StormTech SC-310 +Cap x 45 Inside #1</b><br>Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf<br>Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap<br>45 Chambers in 5 Rows |
|        |         | 1,539 cf      | Total Available Storage  |

Storage Group A created with Chamber Wizard

| Device | Routing   | Invert  | Outlet Devices   |
|--------|-----------|---------|--|
| #1     | Discarded | 101.00' | <b>8.270 in/hr Exfiltration over Surface area</b>  |
| #2     | Primary   | 102.50' | <b>6.0" Round Culvert</b><br>L= 26.0' CPP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 102.50' / 101.05' S= 0.0558 '/' Cc= 0.900<br>n= 0.011, Flow Area= 0.20 sf |

**Discarded OutFlow** Max=0.23 cfs @ 11.75 hrs HW=101.03' (Free Discharge)

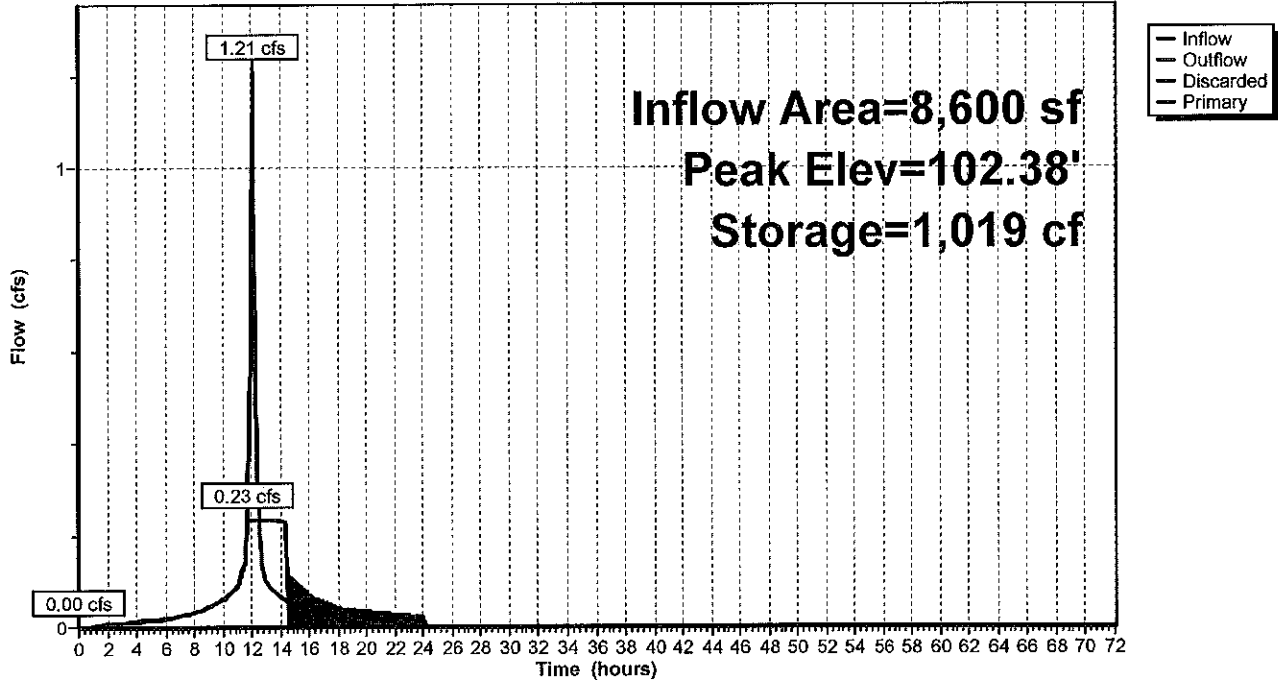
↑1=Exfiltration (Exfiltration Controls 0.23 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=101.00' TW=0.00' (Dynamic Tailwater)

↑2=Culvert ( Controls 0.00 cfs)

Pond INF: Stormtech SC-310

Hydrograph





**PROPOSED REA0149**

Type III 24-hr 25 Year Rainfall=6.41"

Prepared by {enter your company name here}

Printed 11/23/2022

HydroCAD® 10.10-6a s/n 03206 © 2020 HydroCAD Software Solutions LLC

Page 35

**Summary for Pond PCB: Proposed CB to DP**

Inflow Area = 4,532 sf, 100.00% Impervious, Inflow Depth = 6.17" for 25 Year event  
 Inflow = 0.64 cfs @ 12.09 hrs, Volume= 2,331 cf  
 Outflow = 0.64 cfs @ 12.09 hrs, Volume= 2,331 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 0.64 cfs @ 12.09 hrs, Volume= 2,331 cf  
 Routed to Pond DMH : DMH

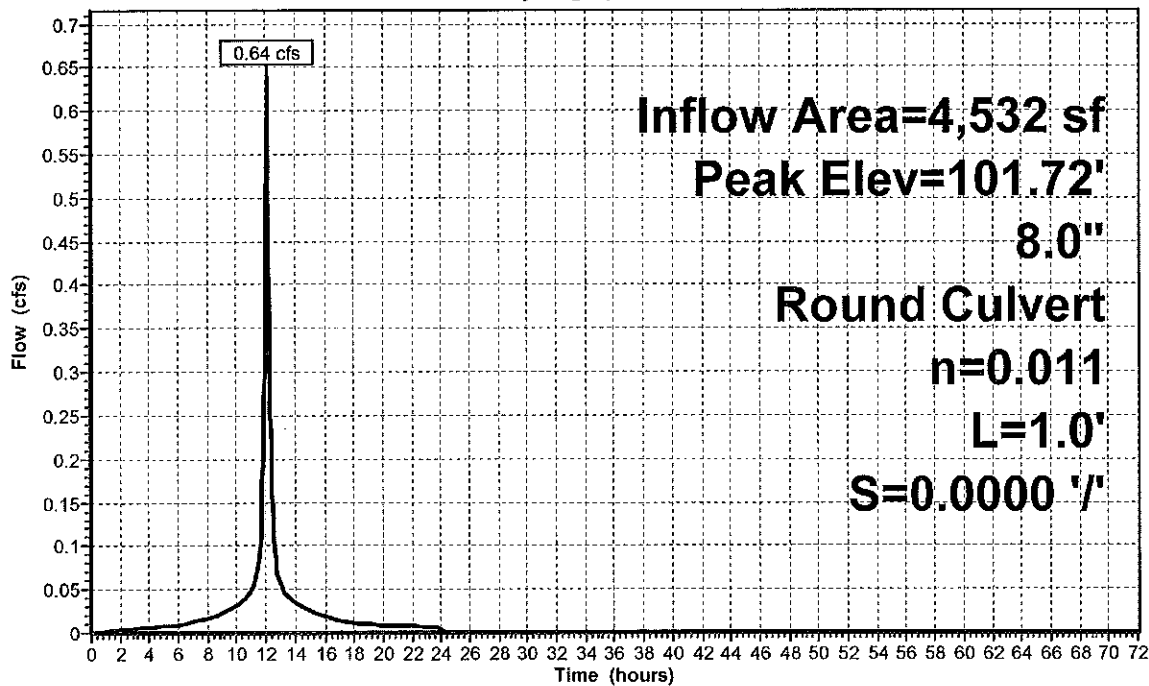
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Peak Elev= 101.72' @ 12.11 hrs  
 Flood Elev= 104.70'

| Device # | Routing | Invert  | Outlet Devices  |
|----------|---------|---------|---|
| #1       | Primary | 101.05' | <b>8.0" Round Culvert</b> L= 1.0' CPP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 101.05' / 101.05' S= 0.0000 '/ Cc= 0.900<br>n= 0.011, Flow Area= 0.35 sf |

Primary OutFlow Max=0.53 cfs @ 12.09 hrs HW=101.69' TW=101.59' (Dynamic Tailwater)  
 ↑1=Culvert (Inlet Controls 0.53 cfs @ 1.53 fps)

**Pond PCB: Proposed CB to DP**

Hydrograph



**PROPOSED REA0149**

Type III 24-hr 25 Year Rainfall=6.41"

Prepared by {enter your company name here}

Printed 11/23/2022

HydroCAD® 10.10-6a s/n 03206 © 2020 HydroCAD Software Solutions LLC

Page 36

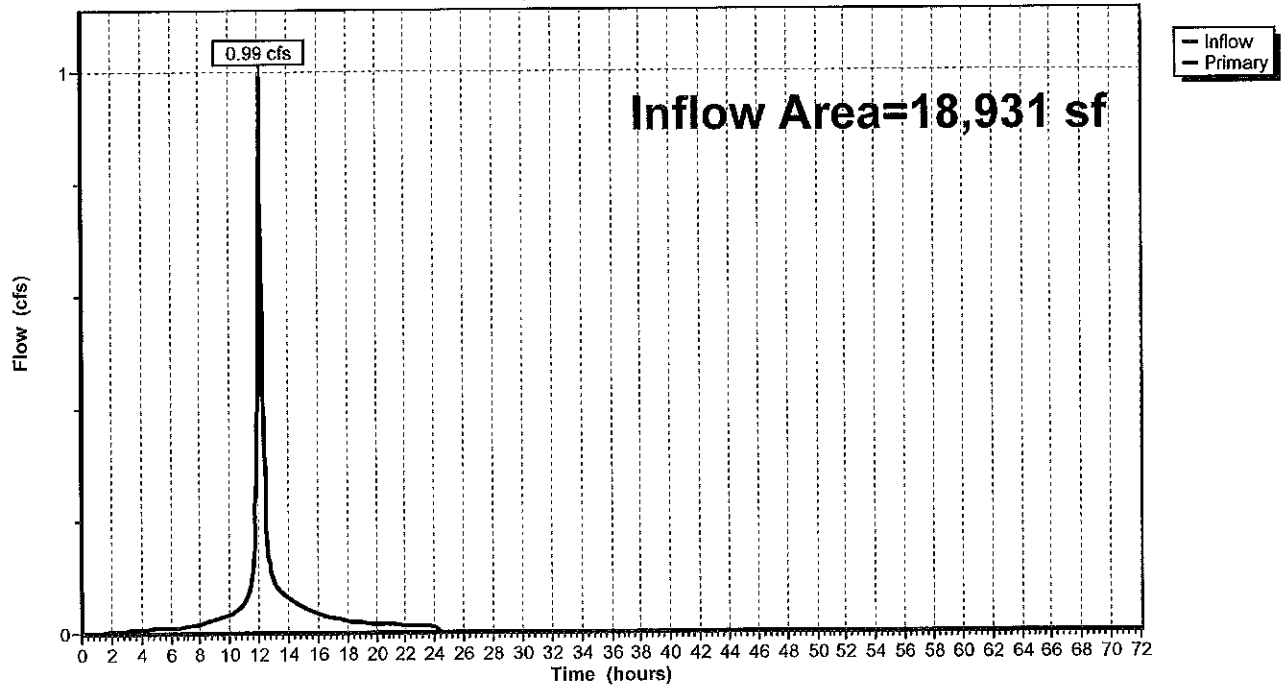
**Summary for Link DP1: Green Street CB**

Inflow Area = 18,931 sf, 81.39% Impervious, Inflow Depth = 2.21" for 25 Year event  
Inflow = 0.99 cfs @ 12.09 hrs, Volume= 3,483 cf  
Primary = 0.99 cfs @ 12.09 hrs, Volume= 3,483 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

**Link DP1: Green Street CB**

Hydrograph



**PROPOSED REA0149**

Type III 24-hr 100 Year Rainfall=8.24"

Prepared by {enter your company name here}

Printed 11/23/2022

HydroCAD® 10.10-6a s/n 03206 © 2020 HydroCAD Software Solutions LLC

Page 37

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points  
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment SC2.1: PROPOSED ROOF** Runoff Area=8,600 sf 100.00% Impervious Runoff Depth=8.00"  
Tc=6.0 min CN=98 Runoff=1.56 cfs 5,733 cf

**Subcatchment SC2.2: PARKING TO CB** Runoff Area=4,532 sf 100.00% Impervious Runoff Depth=8.00"  
Tc=6.0 min CN=98 Runoff=0.82 cfs 3,021 cf

**Subcatchment SC2.3: SHEET TO GREEN** Runoff Area=5,283 sf 39.18% Impervious Runoff Depth=3.74"  
Tc=6.0 min CN=62 Runoff=0.52 cfs 1,648 cf

**Subcatchment SC2.4: TO HAVEN STREET** Runoff Area=516 sf 39.92% Impervious Runoff Depth=3.86"  
Tc=6.0 min CN=63 Runoff=0.05 cfs 166 cf

**Pond CB: HAVEN STREET DRAINAGE** Peak Elev=102.32' Inflow=0.05 cfs 166 cf  
6.0" Round Culvert n=0.011 L=174.0' S=0.0053 '/' Outflow=0.05 cfs 166 cf

**Pond DMH: DMH** Peak Elev=101.71' Inflow=0.87 cfs 3,187 cf  
8.0" Round Culvert n=0.011 L=89.0' S=0.0053 '/' Outflow=0.87 cfs 3,187 cf

**Pond INF: Stormtech SC-310** Peak Elev=102.85' Storage=1,304 cf Inflow=1.56 cfs 5,733 cf  
Discarded=0.23 cfs 5,394 cf Primary=0.30 cfs 347 cf Outflow=0.53 cfs 5,742 cf

**Pond PCB: Proposed CB to DP** Peak Elev=101.92' Inflow=0.82 cfs 3,021 cf  
8.0" Round Culvert n=0.011 L=1.0' S=0.0000 '/' Outflow=0.82 cfs 3,021 cf

**Link DP1: Green Street CB** Inflow=1.39 cfs 5,182 cf  
Primary=1.39 cfs 5,182 cf

Total Runoff Area = 18,931 sf Runoff Volume = 10,569 cf Average Runoff Depth = 6.70"  
18.61% Pervious = 3,523 sf 81.39% Impervious = 15,408 sf



**PROPOSED REA0149**

Type III 24-hr 100 Year Rainfall=8.24"

Prepared by {enter your company name here}

Printed 11/23/2022

HydroCAD® 10.10-6a s/n 03206 © 2020 HydroCAD Software Solutions LLC

Page 38

**Summary for Subcatchment SC2.1: PROPOSED ROOF**

Runoff = 1.56 cfs @ 12.09 hrs, Volume= 5,733 cf, Depth= 8.00"  
 Routed to Pond INF : Stormtech SC-310

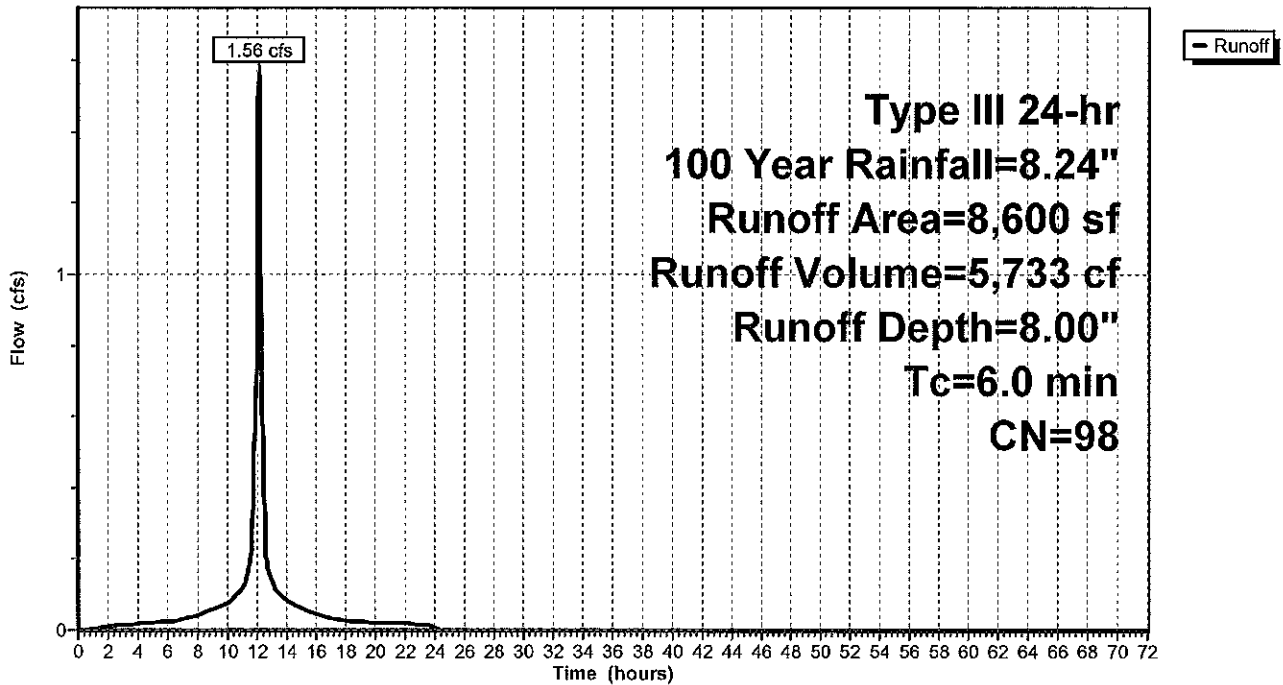
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 100 Year Rainfall=8.24"

| Area (sf) | CN | Description              |
|-----------|----|--------------------------|
| * 8,600   | 98 | Unconnected roofs, HSG A |
| 8,600     |    | 100.00% Impervious Area  |
| 8,600     |    | 100.00% Unconnected      |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 6.0      |               |               |                   |                | Direct Entry, |

**Subcatchment SC2.1: PROPOSED ROOF**

Hydrograph



**PROPOSED REA0149**

Type III 24-hr 100 Year Rainfall=8.24"

Prepared by {enter your company name here}

Printed 11/23/2022

HydroCAD® 10.10-6a s/n 03206 © 2020 HydroCAD Software Solutions LLC

Page 39

**Summary for Subcatchment SC2.2: PARKING TO CB**

Runoff = 0.82 cfs @ 12.09 hrs, Volume= 3,021 cf, Depth= 8.00"  
 Routed to Pond PCB : Proposed CB to DP

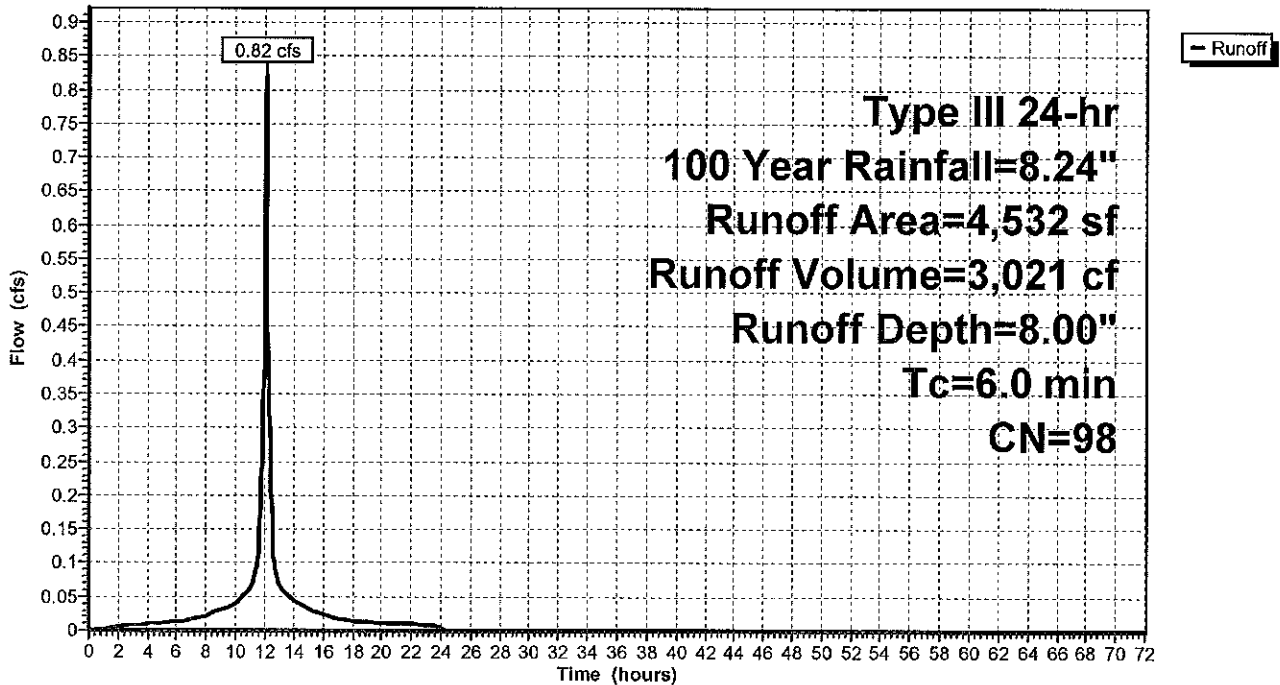
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 100 Year Rainfall=8.24"

|   | Area (sf) | CN | Description             |
|---|-----------|----|-------------------------|
| * | 4,315     | 98 | Paved parking, HSG A    |
| * | 217       | 98 | Concrete, HSG A         |
|   | 4,532     | 98 | Weighted Average        |
|   | 4,532     |    | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 6.0      |               |               |                   |                | Direct Entry, |

**Subcatchment SC2.2: PARKING TO CB**

Hydrograph



**PROPOSED REA0149**

Type III 24-hr 100 Year Rainfall=8.24"

Prepared by {enter your company name here}

Printed 11/23/2022

HydroCAD® 10.10-6a s/n 03206 © 2020 HydroCAD Software Solutions LLC

Page 40

**Summary for Subcatchment SC2.3: SHEET TO GREEN STREET**

Runoff = 0.52 cfs @ 12.10 hrs, Volume= 1,648 cf, Depth= 3.74"  
 Routed to Link DP1 : Green Street CB

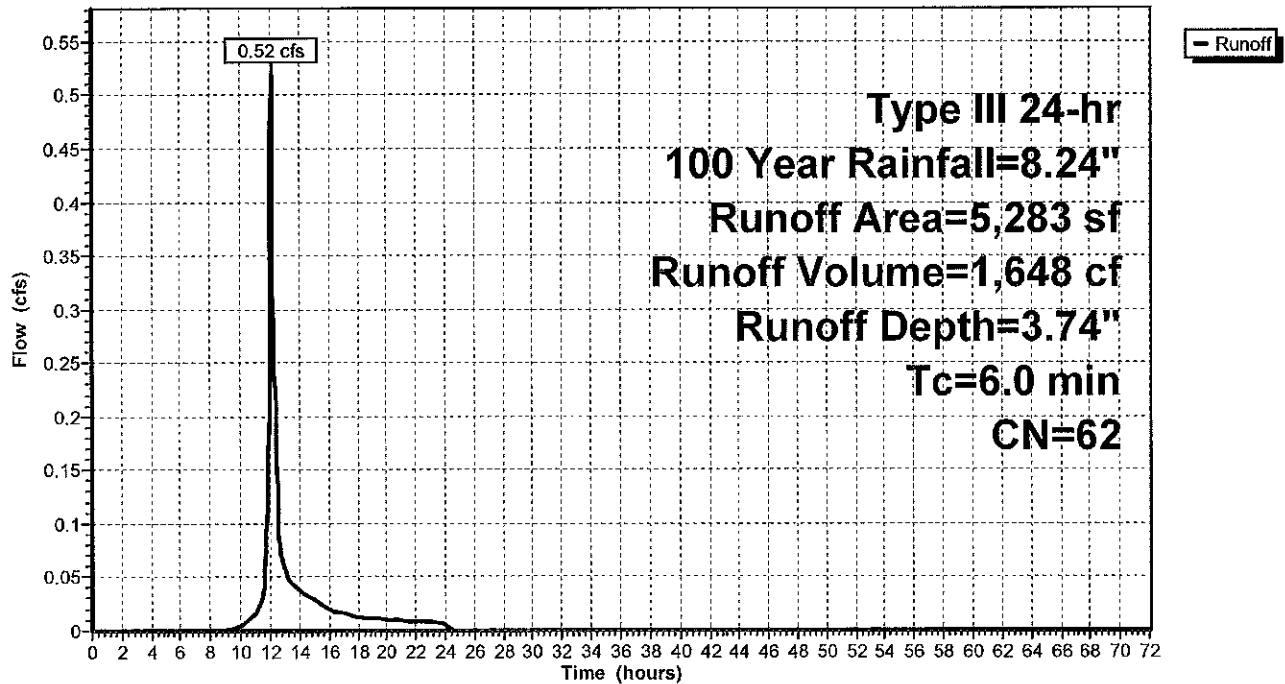
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 100 Year Rainfall=8.24"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 3,213     | 39 | >75% Grass cover, Good, HSG A |
| * 2,070   | 98 | Concrete, HSG A               |
| 5,283     | 62 | Weighted Average              |
| 3,213     |    | 60.82% Pervious Area          |
| 2,070     |    | 39.18% Impervious Area        |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 6.0      |               |               |                   |                | Direct Entry, |

**Subcatchment SC2.3: SHEET TO GREEN STREET**

Hydrograph





**PROPOSED REA0149**

Type III 24-hr 100 Year Rainfall=8.24"

Prepared by {enter your company name here}

Printed 11/23/2022

HydroCAD® 10.10-6a s/n 03206 © 2020 HydroCAD Software Solutions LLC

Page 41

**Summary for Subcatchment SC2.4: TO HAVEN STREET**

Runoff = 0.05 cfs @ 12.09 hrs, Volume= 166 cf, Depth= 3.86"  
 Routed to Pond CB : HAVEN STREET DRAINAGE

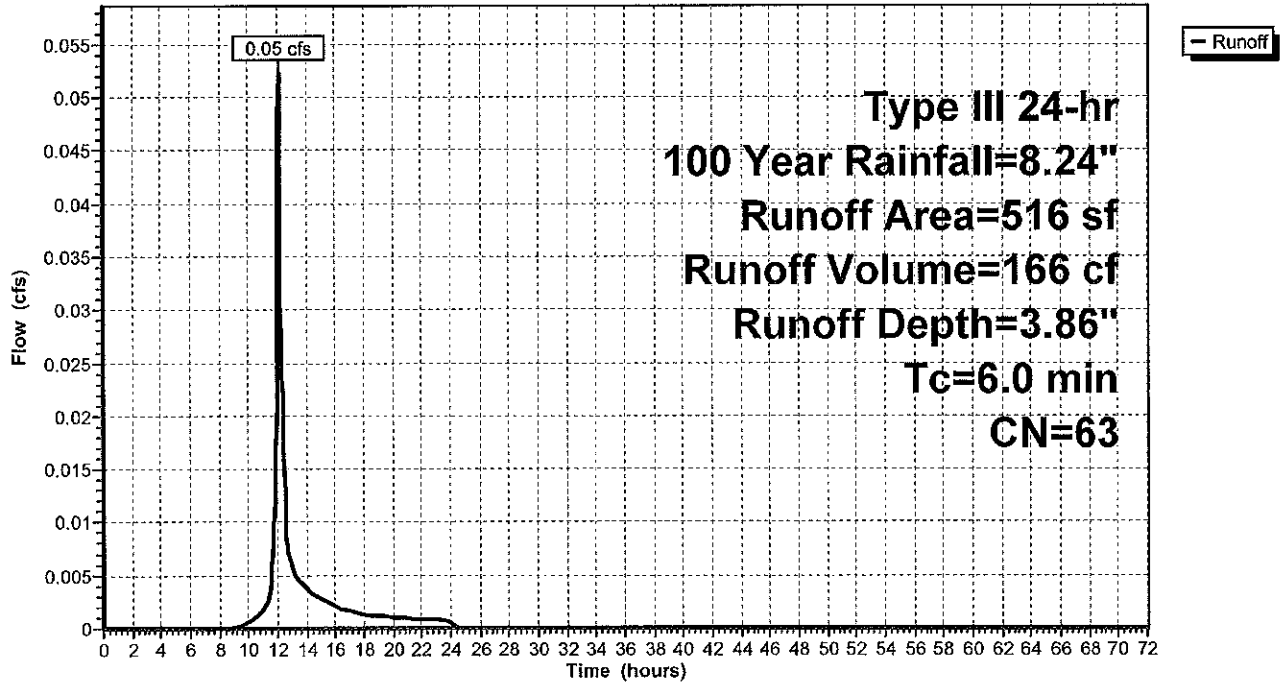
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 100 Year Rainfall=8.24"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 310       | 39 | >75% Grass cover, Good, HSG A |
| * 206     | 98 | Concrete, HSG A               |
| 516       | 63 | Weighted Average              |
| 310       |    | 60.08% Pervious Area          |
| 206       |    | 39.92% Impervious Area        |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 6.0      |               |               |                   |                | Direct Entry, |

**Subcatchment SC2.4: TO HAVEN STREET**

Hydrograph



**PROPOSED REA0149**

Type III 24-hr 100 Year Rainfall=8.24"

Prepared by {enter your company name here}

Printed 11/23/2022

HydroCAD® 10.10-6a s/n 03206 © 2020 HydroCAD Software Solutions LLC

Page 42

**Summary for Pond CB: HAVEN STREET DRAINAGE**

Inflow Area = 516 sf, 39.92% Impervious, Inflow Depth = 3.86" for 100 Year event  
 Inflow = 0.05 cfs @ 12.09 hrs, Volume= 166 cf  
 Outflow = 0.05 cfs @ 12.09 hrs, Volume= 166 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 0.05 cfs @ 12.09 hrs, Volume= 166 cf  
 Routed to Pond DMH : DMH

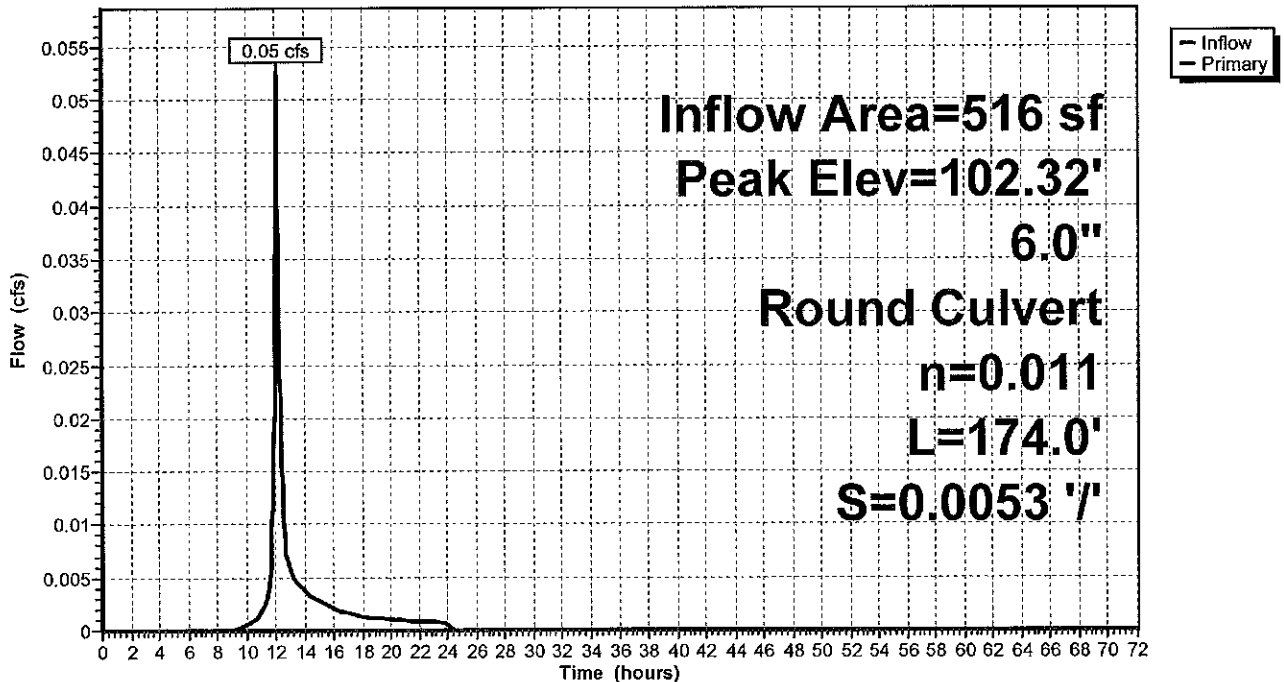
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Peak Elev= 102.32' @ 12.10 hrs  
 Flood Elev= 104.55'

| Device | Routing | Invert  | Outlet Devices   |
|--------|---------|---------|--|
| #1     | Primary | 102.15' | <b>6.0" Round Culvert</b><br>L= 174.0' CPP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 102.15' / 101.22' S= 0.0053 '/ Cc= 0.900<br>n= 0.011, Flow Area= 0.20 sf |

Primary OutFlow Max=0.05 cfs @ 12.09 hrs HW=102.31' TW=101.70' (Dynamic Tailwater)  
 1=Culvert (Outlet Controls 0.05 cfs @ 1.34 fps)

**Pond CB: HAVEN STREET DRAINAGE**

Hydrograph



**PROPOSED REA0149**

Type III 24-hr 100 Year Rainfall=8.24"

Prepared by {enter your company name here}

Printed 11/23/2022

HydroCAD® 10.10-6a s/n 03206 © 2020 HydroCAD Software Solutions LLC

Page 43

**Summary for Pond DMH: DMH**

Inflow Area = 5,048 sf, 93.86% Impervious, Inflow Depth = 7.58" for 100 Year event  
 Inflow = 0.87 cfs @ 12.09 hrs, Volume= 3,187 cf  
 Outflow = 0.87 cfs @ 12.09 hrs, Volume= 3,187 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 0.87 cfs @ 12.09 hrs, Volume= 3,187 cf  
 Routed to Link DP1 : Green Street CB

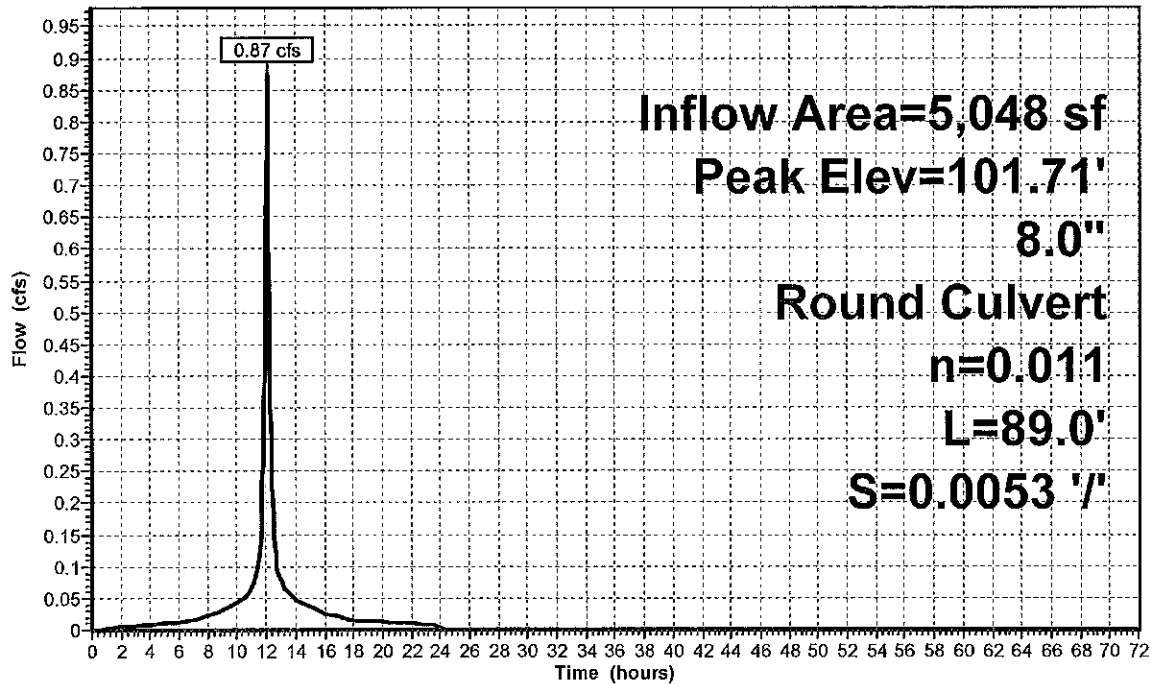
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Peak Elev= 101.71' @ 12.09 hrs  
 Flood Elev= 105.10'

| Device | Routing | Invert  | Outlet Devices  |
|--------|---------|---------|---|
| #1     | Primary | 101.05' | <b>8.0" Round Culvert</b><br>L= 89.0' CPP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 101.05' / 100.58' S= 0.0053 '/ Cc= 0.900<br>n= 0.011, Flow Area= 0.35 sf |

Primary OutFlow Max=0.85 cfs @ 12.09 hrs HW=101.70' TW=0.00' (Dynamic Tailwater)  
 ↑=Culvert (Barrel Controls 0.85 cfs @ 3.12 fps)

**Pond DMH: DMH**

Hydrograph





**Summary for Pond INF: Stormtech SC-310**

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=89)

Inflow Area = 8,600 sf, 100.00% Impervious, Inflow Depth = 8.00" for 100 Year event  
 Inflow = 1.56 cfs @ 12.09 hrs, Volume= 5,733 cf  
 Outflow = 0.53 cfs @ 12.37 hrs, Volume= 5,742 cf, Atten= 66%, Lag= 16.7 min  
 Discarded = 0.23 cfs @ 11.70 hrs, Volume= 5,394 cf  
 Primary = 0.30 cfs @ 12.37 hrs, Volume= 347 cf  
 Routed to Link DP1 : Green Street CB

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Peak Elev= 102.85' @ 12.37 hrs Surf.Area= 1,222 sf Storage= 1,304 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)  
 Center-of-Mass det. time= 25.3 min ( 766.1 - 740.8 )

| Volume | Invert  | Avail.Storage | Storage Description  |
|--------|---------|---------------|--|
| #1A    | 101.00' | 875 cf        | <b>18.17'W x 67.28'L x 2.33'H Field A</b><br>2,852 cf Overall - 663 cf Embedded = 2,189 cf x 40.0% Voids   |
| #2A    | 101.50' | 663 cf        | <b>ADS_StormTech SC-310 +Cap</b> x 45 Inside #1<br>Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf<br>Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap<br>45 Chambers in 5 Rows |
|        |         | 1,539 cf      | Total Available Storage  |

Storage Group A created with Chamber Wizard

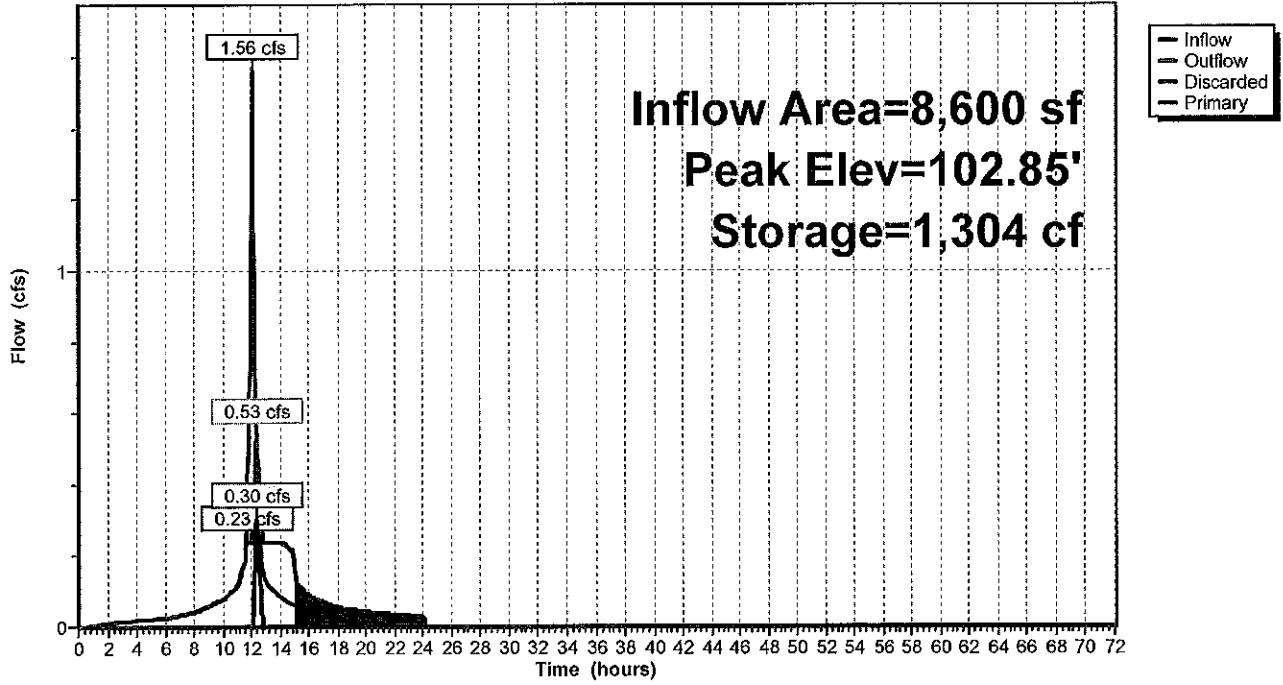
| Device | Routing   | Invert  | Outlet Devices   |
|--------|-----------|---------|--|
| #1     | Discarded | 101.00' | <b>8.270 in/hr Exfiltration over Surface area</b>  |
| #2     | Primary   | 102.50' | <b>6.0" Round Culvert</b><br>L= 26.0' CPP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 102.50' / 101.05' S= 0.0558 ' Cc= 0.900<br>n= 0.011, Flow Area= 0.20 sf |

Discarded OutFlow Max=0.23 cfs @ 11.70 hrs HW=101.04' (Free Discharge)  
 ↑1=Exfiltration (Exfiltration Controls 0.23 cfs)

Primary OutFlow Max=0.30 cfs @ 12.37 hrs HW=102.85' TW=0.00' (Dynamic Tailwater)  
 ↑2=Culvert (Inlet Controls 0.30 cfs @ 2.01 fps)

Pond INF: Stormtech SC-310

Hydrograph



**PROPOSED REA0149**

Type III 24-hr 100 Year Rainfall=8.24"

Prepared by {enter your company name here}

Printed 11/23/2022

HydroCAD® 10.10-6a s/n 03206 © 2020 HydroCAD Software Solutions LLC

Page 46

**Summary for Pond PCB: Proposed CB to DP**

Inflow Area = 4,532 sf, 100.00% Impervious, Inflow Depth = 8.00" for 100 Year event  
 Inflow = 0.82 cfs @ 12.09 hrs, Volume= 3,021 cf  
 Outflow = 0.82 cfs @ 12.09 hrs, Volume= 3,021 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 0.82 cfs @ 12.09 hrs, Volume= 3,021 cf  
 Routed to Pond DMH : DMH

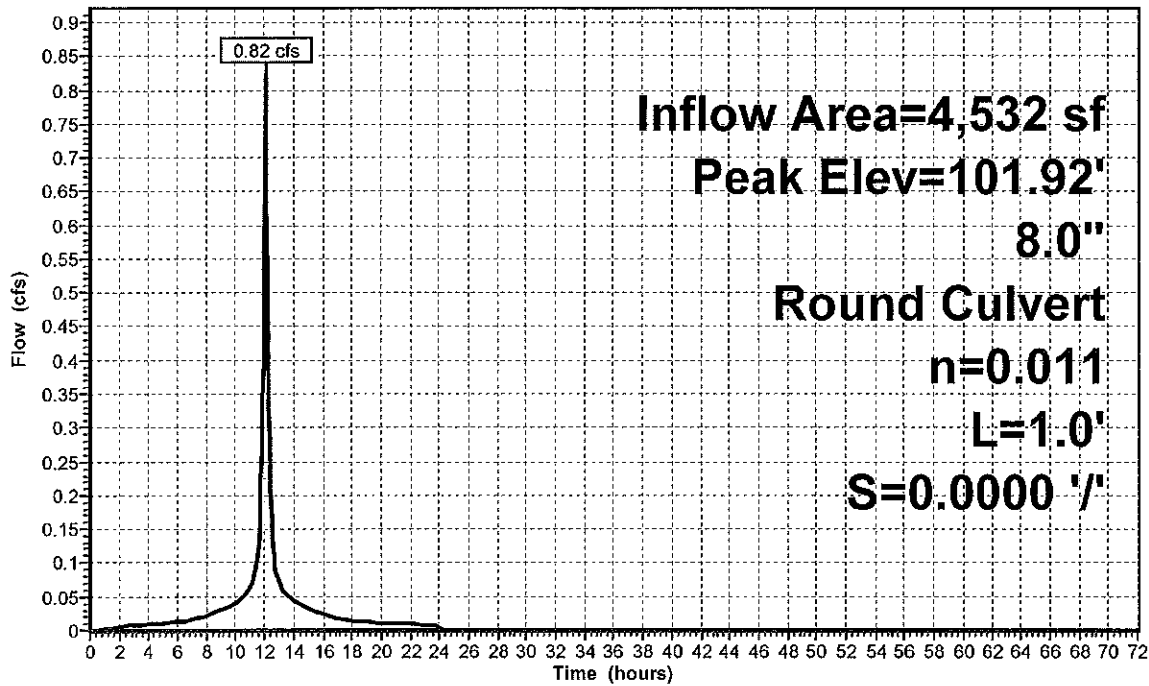
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Peak Elev= 101.92' @ 12.11 hrs  
 Flood Elev= 104.70'

| Device | Routing | Invert  | Outlet Devices   |
|--------|---------|---------|--|
| #1     | Primary | 101.05' | 8.0" Round Culvert L= 1.0' CPP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 101.05' / 101.05' S= 0.0000 '/ Cc= 0.900<br>n= 0.011, Flow Area= 0.35 sf |

Primary OutFlow Max=0.68 cfs @ 12.09 hrs HW=101.86' TW=101.70' (Dynamic Tailwater)  
 ↑1=Culvert (Inlet Controls 0.68 cfs @ 1.96 fps)

**Pond PCB: Proposed CB to DP**

Hydrograph



**PROPOSED REA0149**

Type III 24-hr 100 Year Rainfall=8.24"

Prepared by {enter your company name here}

Printed 11/23/2022

HydroCAD® 10.10-6a s/n 03206 © 2020 HydroCAD Software Solutions LLC

Page 47

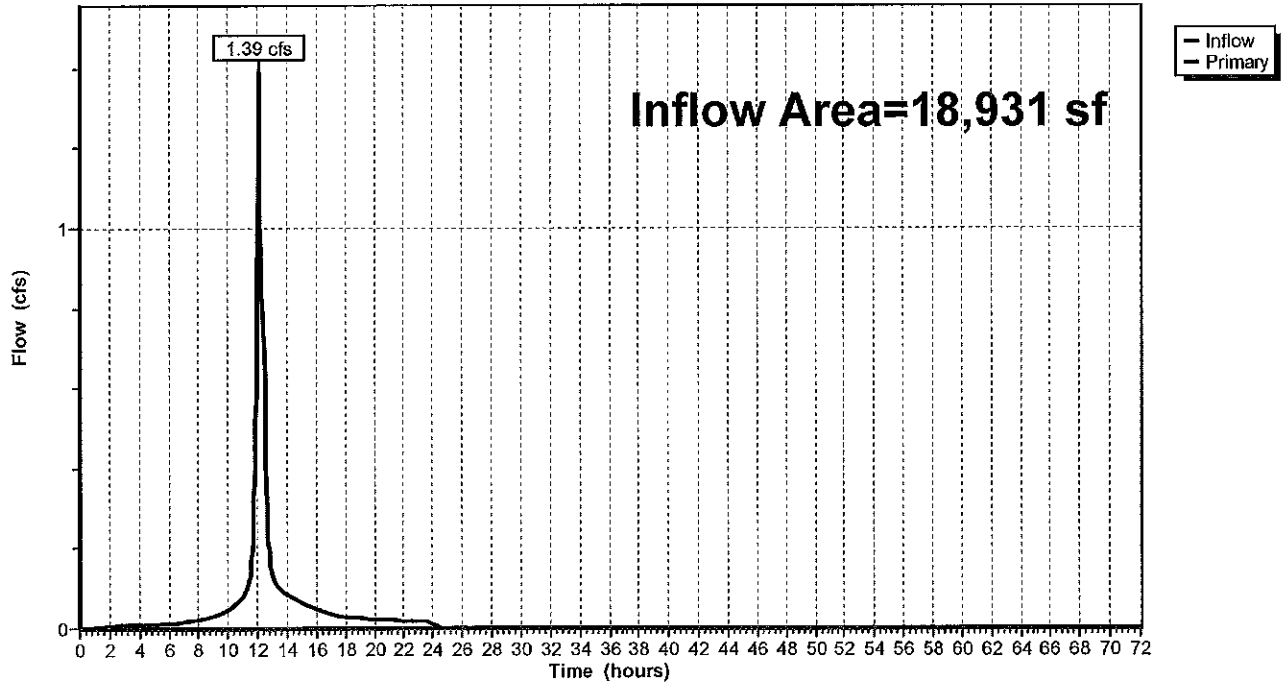
**Summary for Link DP1: Green Street CB**

Inflow Area = 18,931 sf, 81.39% Impervious, Inflow Depth = 3.29" for 100 Year event  
Inflow = 1.39 cfs @ 12.09 hrs, Volume= 5,182 cf  
Primary = 1.39 cfs @ 12.09 hrs, Volume= 5,182 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

**Link DP1: Green Street CB**

Hydrograph





**PROPOSED REA0149**

Prepared by {enter your company name here}

HydroCAD® 10.10-6a s/n 03206 © 2020 HydroCAD Software Solutions LLC

*Multi-Event Tables*

Printed 11/23/2022

Page 48

**Events for Subcatchment SC2.1: PROPOSED ROOF**

| Event    | Rainfall<br>(inches) | Runoff<br>(cfs) | Volume<br>(cubic-feet) | Depth<br>(inches) |
|----------|----------------------|-----------------|------------------------|-------------------|
| 2 Year   | 3.31                 | 0.62            | 2,205                  | 3.08              |
| 10 Year  | 5.22                 | 0.98            | 3,571                  | 4.98              |
| 25 Year  | 6.41                 | 1.21            | 4,423                  | 6.17              |
| 100 Year | <b>8.24</b>          | <b>1.56</b>     | <b>5,733</b>           | <b>8.00</b>       |

**PROPOSED REA0149**

Prepared by {enter your company name here}

HydroCAD® 10.10-6a s/n 03206 © 2020 HydroCAD Software Solutions LLC

*Multi-Event Tables*

Printed 11/23/2022

Page 49

**Events for Subcatchment SC2.2: PARKING TO CB**

| Event    | Rainfall<br>(inches) | Runoff<br>(cfs) | Volume<br>(cubic-feet) | Depth<br>(inches) |
|----------|----------------------|-----------------|------------------------|-------------------|
| 2 Year   | 3.31                 | 0.33            | 1,162                  | 3.08              |
| 10 Year  | 5.22                 | 0.52            | 1,882                  | 4.98              |
| 25 Year  | 6.41                 | 0.64            | 2,331                  | 6.17              |
| 100 Year | <b>8.24</b>          | <b>0.82</b>     | <b>3,021</b>           | <b>8.00</b>       |

**PROPOSED REA0149**

Prepared by {enter your company name here}

HydroCAD® 10.10-6a s/n 03206 © 2020 HydroCAD Software Solutions LLC

*Multi-Event Tables*

Printed 11/23/2022

Page 50

**Events for Subcatchment SC2.3: SHEET TO GREEN STREET**

| Event    | Rainfall<br>(inches) | Runoff<br>(cfs) | Volume<br>(cubic-feet) | Depth<br>(inches) |
|----------|----------------------|-----------------|------------------------|-------------------|
| 2 Year   | 3.31                 | 0.05            | 233                    | 0.53              |
| 10 Year  | 5.22                 | 0.21            | 694                    | 1.58              |
| 25 Year  | 6.41                 | 0.32            | 1,046                  | 2.38              |
| 100 Year | <b>8.24</b>          | <b>0.52</b>     | <b>1,648</b>           | <b>3.74</b>       |

**PROPOSED REA0149**

Prepared by {enter your company name here}

HydroCAD® 10.10-6a s/n 03206 © 2020 HydroCAD Software Solutions LLC

*Multi-Event Tables*

Printed 11/23/2022

Page 51

**Events for Subcatchment SC2.4: TO HAVEN STREET**

| Event    | Rainfall<br>(inches) | Runoff<br>(cfs) | Volume<br>(cubic-feet) | Depth<br>(inches) |
|----------|----------------------|-----------------|------------------------|-------------------|
| 2 Year   | 3.31                 | 0.01            | 24                     | 0.57              |
| 10 Year  | 5.22                 | 0.02            | 71                     | 1.65              |
| 25 Year  | 6.41                 | 0.03            | 106                    | 2.47              |
| 100 Year | <b>8.24</b>          | <b>0.05</b>     | <b>166</b>             | <b>3.86</b>       |



**PROPOSED REA0149**

Prepared by {enter your company name here}

HydroCAD® 10.10-6a s/n 03206 © 2020 HydroCAD Software Solutions LLC

*Multi-Event Tables*

Printed 11/23/2022

Page 52

**Events for Pond CB: HAVEN STREET DRAINAGE**

| Event    | Inflow<br>(cfs) | Primary<br>(cfs) | Elevation<br>(feet) | Storage<br>(cubic-feet) |
|----------|-----------------|------------------|---------------------|-------------------------|
| 2 Year   | 0.01            | 0.01             | 102.20              | <b>0</b>                |
| 10 Year  | 0.02            | 0.02             | 102.25              | 0                       |
| 25 Year  | 0.03            | 0.03             | 102.28              | 0                       |
| 100 Year | <b>0.05</b>     | <b>0.05</b>      | <b>102.32</b>       | 0                       |

**PROPOSED REA0149**

Prepared by {enter your company name here}

HydroCAD® 10.10-6a s/n 03206 © 2020 HydroCAD Software Solutions LLC

*Multi-Event Tables*

Printed 11/23/2022

Page 53

**Events for Pond DMH: DMH**

| Event    | Inflow<br>(cfs) | Primary<br>(cfs) | Elevation<br>(feet) | Storage<br>(cubic-feet) |
|----------|-----------------|------------------|---------------------|-------------------------|
| 2 Year   | 0.33            | 0.33             | 101.41              | 0                       |
| 10 Year  | 0.54            | 0.54             | 101.53              | 0                       |
| 25 Year  | 0.67            | 0.67             | 101.60              | 0                       |
| 100 Year | <b>0.87</b>     | <b>0.87</b>      | <b>101.71</b>       | 0                       |

**PROPOSED REA0149**

Prepared by {enter your company name here}

HydroCAD® 10.10-6a s/n 03206 © 2020 HydroCAD Software Solutions LLC

*Multi-Event Tables*

Printed 11/23/2022

Page 54

**Events for Pond INF: Stormtech SC-310**

| Event    | Inflow<br>(cfs) | Outflow<br>(cfs) | Discarded<br>(cfs) | Primary<br>(cfs) | Elevation<br>(feet) | Storage<br>(cubic-feet) |
|----------|-----------------|------------------|--------------------|------------------|---------------------|-------------------------|
| 2 Year   | 0.62            | 0.23             | <b>0.23</b>        | 0.00             | 101.51              | 253                     |
| 10 Year  | 0.98            | 0.23             | 0.23               | 0.00             | 102.00              | 701                     |
| 25 Year  | 1.21            | 0.23             | 0.23               | 0.00             | 102.38              | 1,019                   |
| 100 Year | <b>1.56</b>     | <b>0.53</b>      | 0.23               | <b>0.30</b>      | <b>102.85</b>       | <b>1,304</b>            |

**PROPOSED REA0149**

Prepared by {enter your company name here}

HydroCAD® 10.10-6a s/n 03206 © 2020 HydroCAD Software Solutions LLC

*Multi-Event Tables*

Printed 11/23/2022

Page 55

**Events for Pond PCB: Proposed CB to DP**

| Event    | Inflow<br>(cfs) | Primary<br>(cfs) | Elevation<br>(feet) | Storage<br>(cubic-feet) |
|----------|-----------------|------------------|---------------------|-------------------------|
| 2 Year   | 0.33            | 0.33             | 101.48              | 0                       |
| 10 Year  | 0.52            | 0.52             | 101.62              | 0                       |
| 25 Year  | 0.64            | 0.64             | 101.72              | 0                       |
| 100 Year | <b>0.82</b>     | <b>0.82</b>      | <b>101.92</b>       | 0                       |



**PROPOSED REA0149**

Prepared by {enter your company name here}

HydroCAD® 10.10-6a s/n 03206 © 2020 HydroCAD Software Solutions LLC

*Multi-Event Tables*

Printed 11/23/2022

Page 56

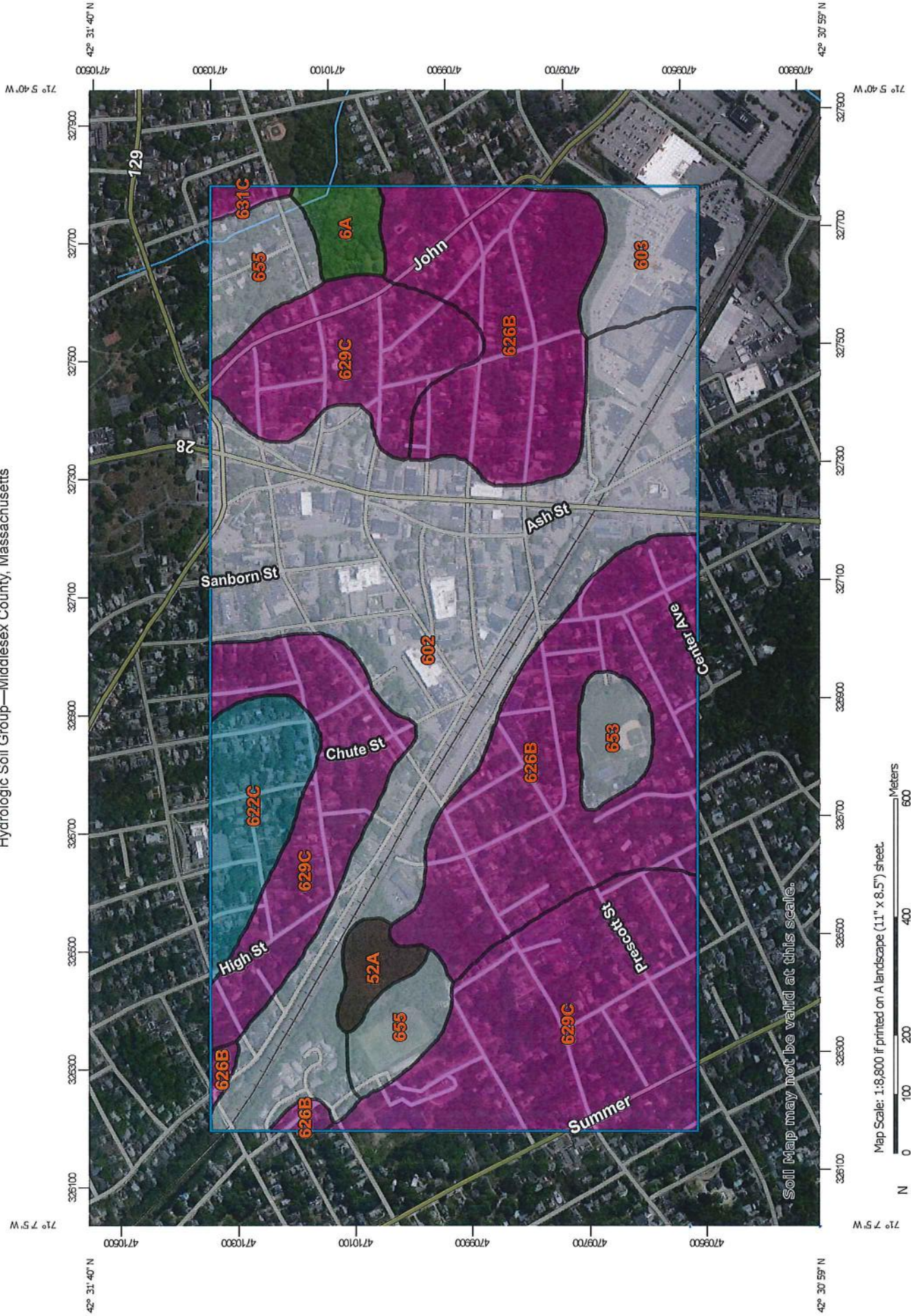
**Events for Link DP1: Green Street CB**

| Event    | Inflow<br>(cfs) | Primary<br>(cfs) | Elevation<br>(feet) |
|----------|-----------------|------------------|---------------------|
| 2 Year   | 0.38            | 0.38             | <b>0.00</b>         |
| 10 Year  | 0.74            | 0.74             | 0.00                |
| 25 Year  | 0.99            | 0.99             | 0.00                |
| 100 Year | <b>1.39</b>     | <b>1.39</b>      | 0.00                |

# Appendix B:

## NRCS Soil Maps

Hydrologic Soil Group—Middlesex County, Massachusetts



Soil Map may not be valid at this scale.

Map Scale: 1:8,800 if printed on A landscape (11" x 8.5") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84



Natural Resources  
Conservation Service

Web Soil Survey  
National Cooperative Soil Survey



## MAP LEGEND

|                            |                            |
|----------------------------|----------------------------|
| Area of Interest (AOI)     | C                          |
| Area of Interest (AOI)     | C/D                        |
| Soils                      | D                          |
| Soil Rating Polygons       | Not rated or not available |
| A                          | Water Features             |
| A/D                        | Streams and Canals         |
| B                          | Transportation             |
| B/D                        | Rails                      |
| C                          | Interstate Highways        |
| C/D                        | US Routes                  |
| D                          | Major Roads                |
| Not rated or not available | Local Roads                |
| Soil Rating Lines          | Background                 |
| A                          | Aerial Photography         |
| A/D                        |                            |
| B                          |                            |
| B/D                        |                            |
| C                          |                            |
| C/D                        |                            |
| D                          |                            |
| Not rated or not available |                            |
| Soil Rating Points         |                            |
| A                          |                            |
| A/D                        |                            |
| B                          |                            |
| B/D                        |                            |

## MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:25,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service  
 Web Soil Survey URL:  
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Middlesex County, Massachusetts  
 Survey Area Data: Version 22, Sep 9, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 22, 2022—Jun 5, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.



## Hydrologic Soil Group

| Map unit symbol                    | Map unit name   | Rating | Acres in AOI | Percent of AOI |
|------------------------------------|---|--------|--------------|----------------|
| 6A                                 | Scarboro mucky fine sandy loam, 0 to 3 percent slopes             | A/D    | 4.7          | 1.4%           |
| 52A                                | Freetown muck, 0 to 1 percent slopes                              | B/D    | 3.8          | 1.2%           |
| 602                                | Urban land  |        | 100.8        | 30.5%          |
| 603                                | Urban land, wet substratum  |        | 10.3         | 3.1%           |
| 622C                               | Paxton-Urban land complex, 3 to 15 percent slopes                 | C      | 13.9         | 4.2%           |
| 626B                               | Merrimac-Urban land complex, 0 to 8 percent slopes                | A      | 84.0         | 25.4%          |
| 629C                               | Canton-Charlton-Urban land complex, 3 to 15 percent slopes        | A      | 91.1         | 27.6%          |
| 631C                               | Charlton-Urban land-Hollis complex, 3 to 15 percent slopes, rocky | A      | 1.3          | 0.4%           |
| 653                                | Udorthents, sandy   |        | 5.8          | 1.8%           |
| 655                                | Udorthents, wet substratum  |        | 14.9         | 4.5%           |
| <b>Totals for Area of Interest</b> |   |        | <b>330.8</b> | <b>100.0%</b>  |

## Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

## Rating Options

*Aggregation Method:* Dominant Condition

*Component Percent Cutoff:* None Specified

*Tie-break Rule:* Higher

# Appendix C:

## Water Quality Flow Calculations







**Water Quality Flow Calculation**  
 25 Haven Street  
 Reading, MA  
 November 22, 2022

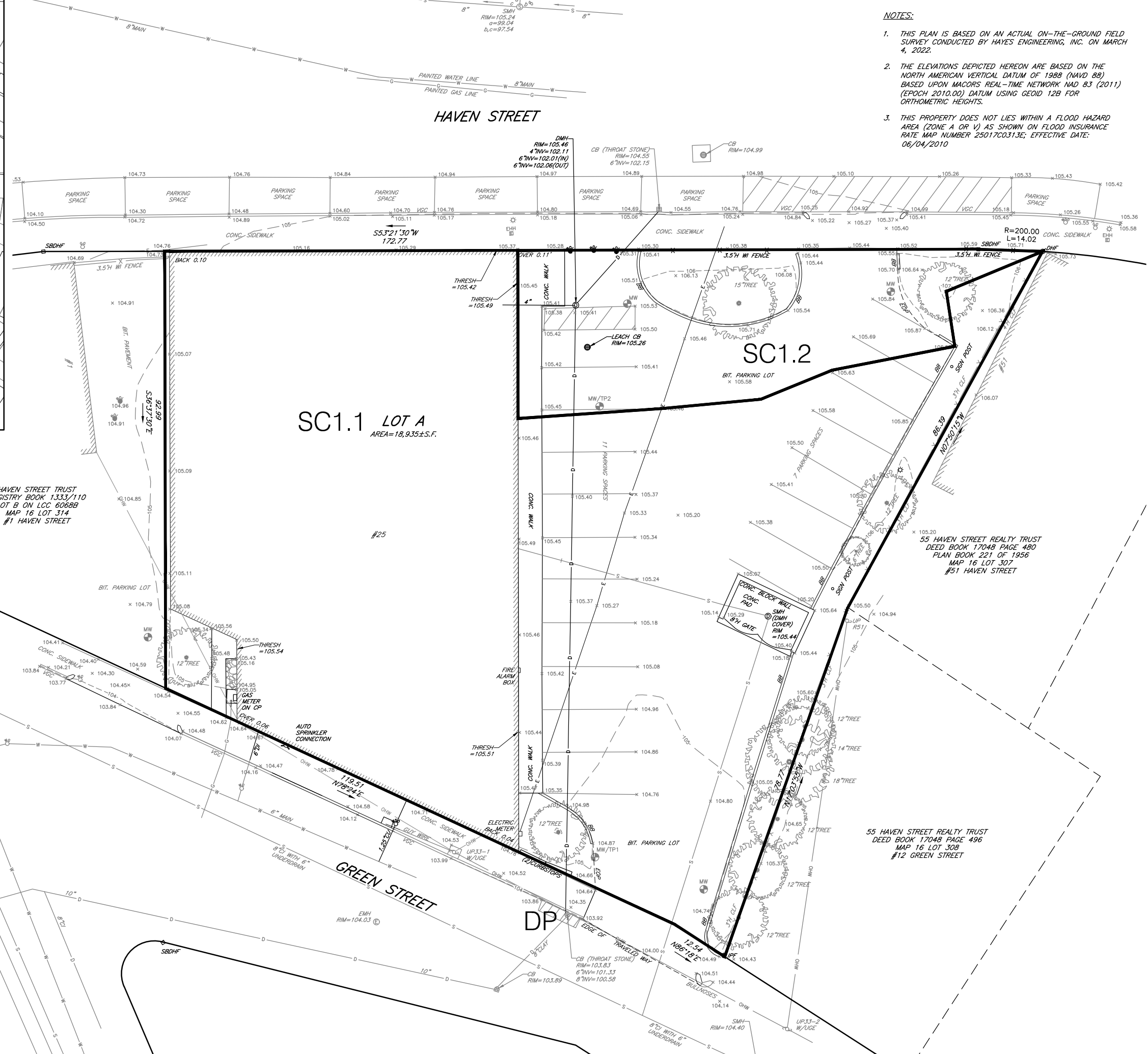
Figure 2: For First 1/4-inch of Runoff, Table of qu values for Ia/P Curve = 0.0.058, listed by tc, for Type III Storm Distribution



| Tc (Hours) | qu (csm/in) | Tc (Hours) | qu (csm/in) | Tc (Hours) | qu (csm/in) | Tc (Hours) | qu (csm/in) |
|------------|-------------|------------|-------------|------------|-------------|------------|-------------|
| 0.01       | 821         | 1.8        | 246         | 5.3        | 116         | 8.8        | 77          |
| 0.03       | 821         | 1.9        | 238         | 5.4        | 115         | 8.9        | 76          |
| 0.05       | 813         | 2          | 230         | 5.5        | 113         | 9          | 76          |
| 0.067      | 794         | 2.1        | 223         | 5.6        | 112         | 9.1        | 75          |
| 0.083      | 773         | 2.2        | 217         | 5.7        | 110         | 9.2        | 74          |
| 0.1        | 752         | 2.3        | 211         | 5.8        | 109         | 9.3        | 74          |
| 0.116      | 733         | 2.4        | 205         | 5.9        | 107         | 9.4        | 73          |
| 0.133      | 713         | 2.5        | 200         | 6          | 106         | 9.5        | 72          |
| 0.15       | 694         | 2.6        | 194         | 6.1        | 104         | 9.6        | 72          |
| 0.167      | 677         | 2.7        | 190         | 6.2        | 103         | 9.7        | 71          |
| 0.183      | 662         | 2.8        | 185         | 6.3        | 102         | 9.8        | 70          |
| 0.2        | 646         | 2.9        | 181         | 6.4        | 100         | 9.9        | 70          |
| 0.217      | 632         | 3          | 176         | 6.5        | 99          | 10         | 69          |
| 0.233      | 619         | 3.1        | 173         | 6.6        | 98          |            |             |
| 0.25       | 606         | 3.2        | 169         | 6.7        | 97          |            |             |
| 0.3        | 572         | 3.3        | 165         | 6.8        | 96          |            |             |
| 0.333      | 552         | 3.4        | 162         | 6.9        | 94          |            |             |
| 0.35       | 542         | 3.5        | 158         | 7          | 93          |            |             |
| 0.4        | 516         | 3.6        | 155         | 7.1        | 92          |            |             |
| 0.416      | 508         | 3.7        | 152         | 7.2        | 91          |            |             |
| 0.5        | 472         | 3.8        | 149         | 7.3        | 90          |            |             |
| 0.583      | 443         | 3.9        | 147         | 7.4        | 89          |            |             |
| 0.6        | 437         | 4          | 144         | 7.5        | 88          |            |             |
| 0.667      | 417         | 4.1        | 141         | 7.6        | 87          |            |             |
| 0.7        | 408         | 4.2        | 139         | 7.7        | 86          |            |             |
| 0.8        | 383         | 4.3        | 136         | 7.8        | 85          |            |             |
| 0.9        | 361         | 4.4        | 134         | 7.9        | 84          |            |             |
| 1          | 342         | 4.5        | 132         | 8          | 84          |            |             |
| 1.1        | 325         | 4.6        | 130         | 8.1        | 83          |            |             |
| 1.2        | 311         | 4.7        | 128         | 8.2        | 82          |            |             |
| 1.3        | 297         | 4.8        | 126         | 8.3        | 81          |            |             |
| 1.4        | 285         | 4.9        | 124         | 8.4        | 80          |            |             |
| 1.5        | 274         | 5          | 122         | 8.5        | 79          |            |             |
| 1.6        | 264         | 5.1        | 120         | 8.6        | 79          |            |             |
| 1.7        | 254         | 5.2        | 118         | 8.7        | 78          |            |             |

# Appendix D:

## Watershed Plans



- NOTES:**
1. THIS PLAN IS BASED ON AN ACTUAL ON-THE-GROUND FIELD SURVEY CONDUCTED BY HAYES ENGINEERING, INC. ON MARCH 4, 2022.
  2. THE ELEVATIONS DEPICTED HEREON ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88) BASED UPON MACORS REAL-TIME NETWORK NAD 83 (2011) (EPOCH 2010.00) DATUM USING GEOID 12B FOR ORTHOMETRIC HEIGHTS.
  3. THIS PROPERTY DOES NOT LIE WITHIN A FLOOD HAZARD AREA (ZONE A OR V) AS SHOWN ON FLOOD INSURANCE RATE MAP NUMBER 25017C0313E; EFFECTIVE DATE: 06/04/2010

**LOCUS MAP:**  
(1"=100')

STRUCTURES AND BOUNDARIES COMPILED FROM MASSMAPPER GIS INFORMATION

HAVEN STREET TRUST  
REGISTRY BOOK 1333/110  
LOT B ON LCC 6068B  
MAP 16 LOT 314  
#1 HAVEN STREET

55 HAVEN STREET REALTY TRUST  
DEED BOOK 17048 PAGE 480  
PLAN BOOK 221 OF 1956  
MAP 16 LOT 307  
#51 HAVEN STREET

55 HAVEN STREET REALTY TRUST  
DEED BOOK 17048 PAGE 496  
MAP 16 LOT 308  
#12 GREEN STREET

**LEGEND:**

- 104 --- MINOR CONTOUR
- 105 --- MAJOR CONTOUR
- FENCE
- WATER LINE
- WATER GATE
- WATER SHUTOFF
- SEWER LINE
- SEWER MANHOLE
- DRAIN LINE
- DRAIN MANHOLE
- CATCH BASINS
- GAS LINE
- GAS GATE
- ELECTRIC LINE
- OVERHEAD WIRE
- ELECTRIC MANHOLE
- ELECTRIC HANDHOLE
- UTILITY POLE
- LIGHTPOLE
- DRILL HOLE FOUND
- STONE BOUND DRILL HOLE FOUND
- IRON ROD/PIPE FOUND
- DECIDUOUS TREE
- BOLLARD
- MONITORING WELL
- 3' H --- 3 FEET HIGH
- BB --- BITUMINOUS BERM
- BIT --- BITUMINOUS
- CI --- CAST IRON
- CLF --- CHAINLINK FENCE
- CONC. --- CONCRETE
- DI --- DUCTILE IRON
- EP --- EDGE OF PAVEMENT
- VCC --- UNDERGROUND ELECTRIC
- VERTICAL GRANITE CURB
- PROPOSED WATER LINE
- PROPOSED SEWER LINE
- PROPOSED GREASE TRAP
- PROPOSED CATCH BASIN
- PROPOSED DRAIN LINE
- PROPOSED DRAIN MANHOLE
- PROPOSED OVERHEAD WIRE
- PROPOSED UTILITY POLE
- PROPOSED SPOT ELEVATION
- PROPOSED FLOW
- PROPOSED GRANITE CURB
- PROPOSED

Prepared For:  
25 HAVEN STREET, LLC  
25 HAVEN STREET  
READING, MASSACHUSETTS  
REGISTRY BOOK 1557/74  
ASSESSORS MAP 16 LOT 309

Prepared By:  
Hayes Engineering, Inc.  
103 Commercial Street  
Reading, MA 01860  
Ph: 781.246.2800  
Fax: 781.246.7596  
www.hayeseng.com

Design By: JG  
Drawn By: xxx  
Checked By: PJO  
Project File: xxx  
Comp. No: REA175  
 Issued For Permit  
 Issued For Review  
 Issued For Bid  
 Issued For Construction  
 Not For Construction

| No. | Revision | Date |
|-----|----------|------|
| 10  |          |      |
| 9   |          |      |
| 8   |          |      |
| 7   |          |      |
| 6   |          |      |
| 5   |          |      |
| 4   |          |      |
| 3   |          |      |
| 2   |          |      |
| 1   |          |      |

Date: November 22, 2022

Drawing Title:  
EXISTING WATERSHED  
25 HAVEN STREET  
READING, MASS.

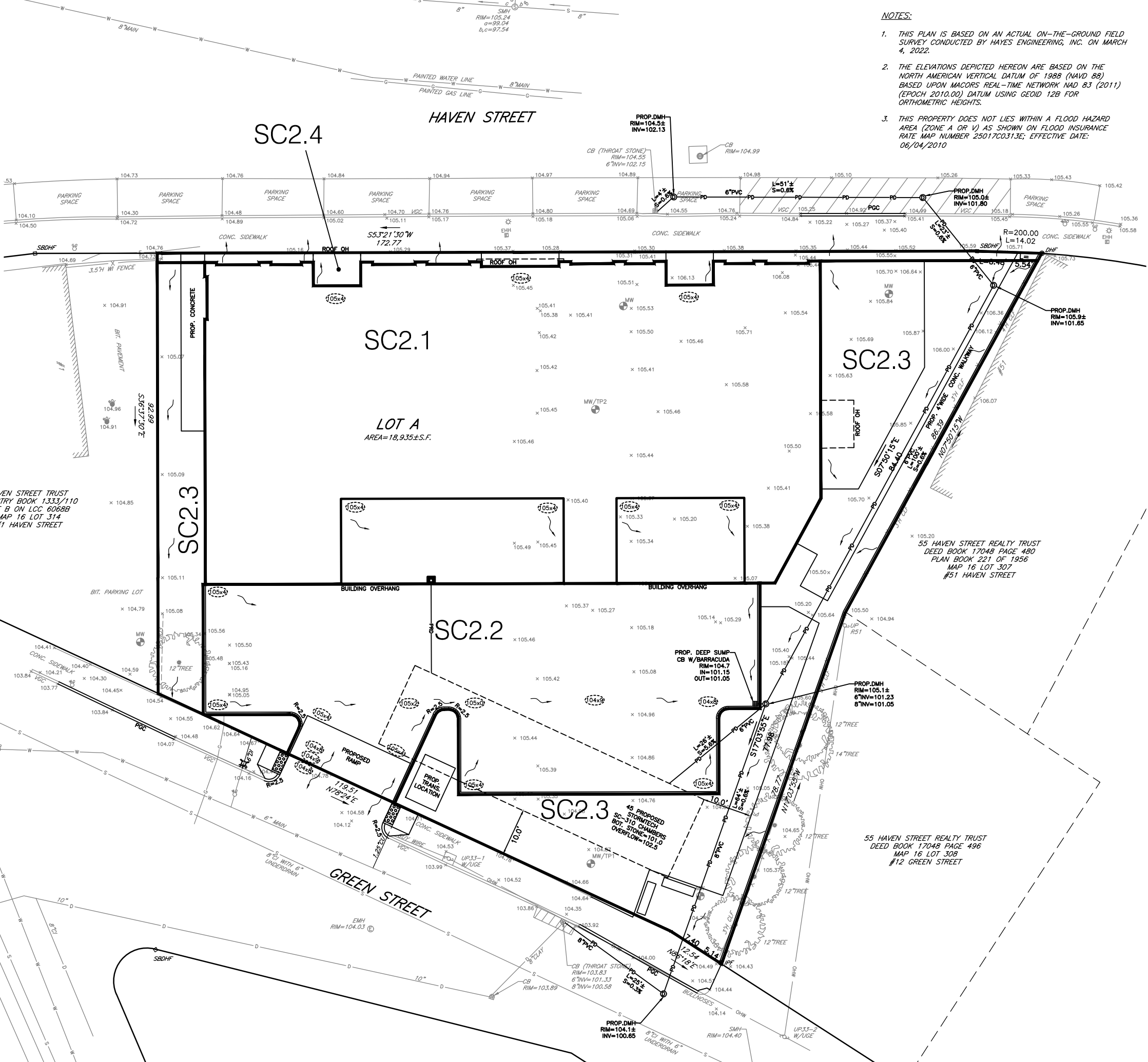
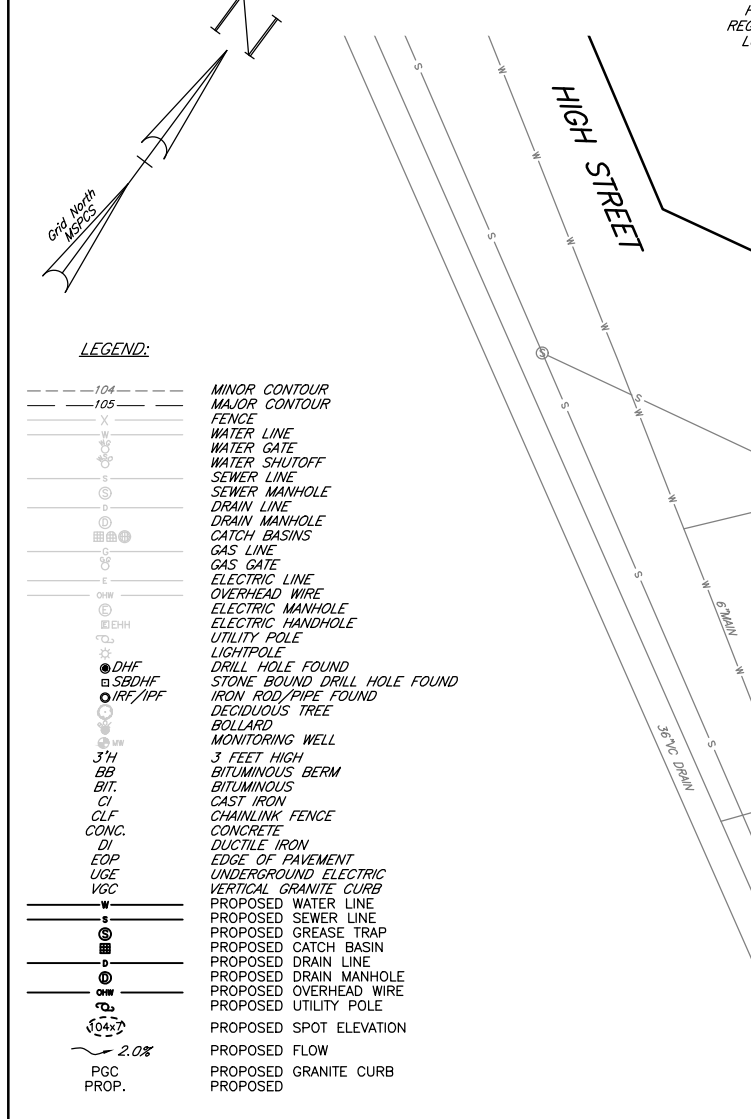
Drawing No.:  
SW

SHEET 1 OF 2





LOCUS MAP:  
(1"=100')  
STRUCTURES AND BOUNDARIES COMPILED FROM  
MASSMAPPER GIS INFORMATION



**NOTES:**

- THIS PLAN IS BASED ON AN ACTUAL ON-THE-GROUND FIELD SURVEY CONDUCTED BY HAYES ENGINEERING, INC. ON MARCH 4, 2022.
- THE ELEVATIONS DEPICTED HEREON ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88) BASED UPON MACORS REAL-TIME NETWORK NAD 83 (2011) (EPOCH 2010.00) DATUM USING GEOID 12B FOR ORTHOMETRIC HEIGHTS.
- THIS PROPERTY DOES NOT LIE WITHIN A FLOOD HAZARD AREA (ZONE A OR V) AS SHOWN ON FLOOD INSURANCE RATE MAP NUMBER 25017C0313E; EFFECTIVE DATE: 06/04/2010

HAVEN STREET TRUST  
REGISTRY BOOK 1333/110  
LOT B ON LCC 6068B  
MAP 16 LOT 314  
#1 HAVEN STREET

55 HAVEN STREET REALTY TRUST  
DEED BOOK 17048 PAGE 480  
PLAN BOOK 221 OF 1956  
MAP 16 LOT 307  
#51 HAVEN STREET

55 HAVEN STREET REALTY TRUST  
DEED BOOK 17048 PAGE 496  
MAP 16 LOT 308  
#12 GREEN STREET

- LEGEND:**
- 104 --- MINOR CONTOUR
  - 105 --- MAJOR CONTOUR
  - FENCE
  - WATER LINE
  - WATER GATE
  - WATER SHUTOFF
  - SEWER LINE
  - SEWER MANHOLE
  - DRAIN LINE
  - DRAIN MANHOLE
  - CATCH BASINS
  - GAS LINE
  - GAS GATE
  - ELECTRIC LINE
  - OVERHEAD WIRE
  - ELECTRIC MANHOLE
  - ELECTRIC HANDHOLE
  - UTILITY POLE
  - LIGHTPOLE
  - DRILL HOLE FOUND
  - STONE BOUND DRILL HOLE FOUND
  - IRON ROD/PIPE FOUND
  - DECIDUOUS TREE
  - BOLLARD
  - MONITORING WELL
  - 3' HIGH BITUMINOUS BERM
  - BITUMINOUS CURB
  - CAST IRON CHAINLINK FENCE
  - CONCRETE DUCTILE IRON
  - EDGE OF PAVEMENT
  - UNDERGROUND ELECTRIC
  - VERTICAL GRANITE CURB
  - PROPOSED WATER LINE
  - PROPOSED SEWER LINE
  - PROPOSED GREASE TRAP
  - PROPOSED CATCH BASIN
  - PROPOSED DRAIN LINE
  - PROPOSED DRAIN MANHOLE
  - PROPOSED OVERHEAD WIRE
  - PROPOSED UTILITY POLE
  - PROPOSED SPOT ELEVATION
  - PROPOSED FLOW
  - PROPOSED GRANITE CURB
  - PROPOSED

Prepared For:  
25 HAVEN STREET, LLC  
25 HAVEN STREET  
READING, MASSACHUSETTS  
REGISTRY BOOK 1557/74  
ASSESSORS MAP 16 LOT 309

Prepared By:  
Hayes Engineering, Inc.  
103 Commercial Street  
Woburn, MA 01890  
Ph: 781.246.2800  
Fax: 781.246.7596  
www.hayeseng.com

Design By: JG  
Drawn By: xxx  
Checked By: PJO  
Project File: REA-0419  
Comp. No: REA175  
 Issued For Permit  
 Issued For Review  
 Issued For Bid  
 Issued For Construction  
 Not For Construction

| No. | Revision | Date |
|-----|----------|------|
| 10  |          |      |
| 9   |          |      |
| 8   |          |      |
| 7   |          |      |
| 6   |          |      |
| 5   |          |      |
| 4   |          |      |
| 3   |          |      |
| 2   |          |      |
| 1   |          |      |

Date: November 22, 2022

Drawing Title:  
PROPOSED WATERSHED  
25 HAVEN STREET  
READING, MASS.

Drawing No.:  
SW

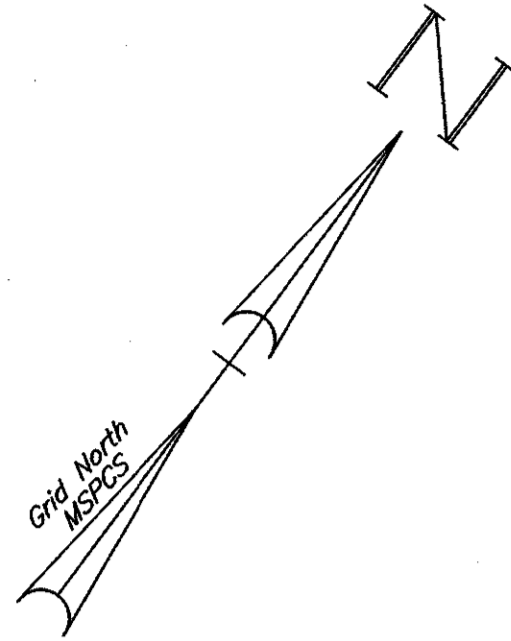
SHEET 2 OF 2



# SITE PLAN REVIEW & SPECIAL PERMIT SET

## 25 HAVEN STREET (MIXED-USE DEVELOPMENT)

### Reading, MA



**Vicinity Map**  
Scale: 1"=200'±

READING COMMUNITY PLANNING AND  
DEVELOPMENT COMMISSION

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
DATE: \_\_\_\_\_

**RECORD OWNER:**  
25 HAVEN STREET, LLC  
25 HAVEN STREET, READING, MASSACHUSETTS  
-ASSESSORS MAP 16 LOT 309  
-BOOK 1557 PAGE 74  
-LOT B ON LCC 6084B

**PLAN REFERENCES:**  
- LCC 6084B  
- LCC 19824A  
- PLAN 221 OF 1956

**NOTES:**

1. THIS PLAN IS BASED ON AN ACTUAL ON-THE-GROUND FIELD SURVEY CONDUCTED BY HAYES ENGINEERING, INC. ON MARCH 4, 2022.
2. THE ELEVATIONS DEPICTED HEREON ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88) BASED UPON MACORS REAL-TIME NETWORK NAD 83 (2011) (EPOCH 2010.00) DATUM USING GEOID 12B FOR ORTHOMETRIC HEIGHTS.
3. THIS PROPERTY DOES NOT LIES WITHIN A FLOOD HAZARD AREA (ZONE A OR V) AS SHOWN ON FLOOD INSURANCE RATE MAP NUMBER 25017C0313E, EFFECTIVE DATE: 06/04/2010

| SHEET INDEX          |       |
|----------------------|-------|
| PLAN TITLE           | INDEX |
| INDEX                | C1    |
| EXISTING CONDITION   | C2    |
| DEMO/RELOCATION      | C3    |
| SITE LAYOUT PLAN     | C4    |
| DRAINAGE AND GRADING | C5    |
| UTILITIES            | C6    |
| DETAILS              | C7    |
| DETAILS              | C8    |

**REQUESTED WAIVERS AND VARIANCES:**

ZONING BYLAW:

- SECTION 9.1.1.7 OFF-STREET LOADING REQUIREMENTS
- SECTION 10.5.6.1 RESIDENTIAL DENSITY ALLOWANCES

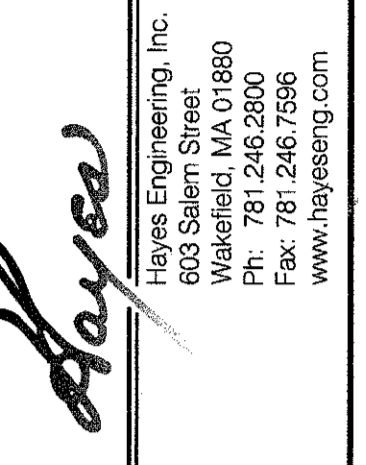
SITE PLAN REVIEW PROCEDURES:

- H9: OUTDOOR LIGHTING
- H11: SIGNAGE
- J4: LIMIT OF WORK DELINEATION
- J4: TELEPHONE AND CABLE
- Q: TRAFFIC STUDY

Prepared For:

25 HAVEN STREET, LLC  
25 HAVEN STREET  
READING, MASSACHUSETTS  
REGISTRY BOOK 1557/74  
ASSESSORS MAP 16 LOT 309

Prepared By:



Design By: JG  
Drawn By: JG  
Checked By: PUJ  
Project File: REA-0419  
Comp. No: REA175  
 Issued For Permit  
 Issued For Review  
 Issued For Bid  
 Issued For Construction  
 Not For Construction

| No. | Revision | Date |
|-----|----------|------|
| 10  |          |      |
| 9   |          |      |
| 8   |          |      |
| 7   |          |      |
| 6   |          |      |
| 5   |          |      |
| 4   |          |      |
| 3   |          |      |
| 2   |          |      |
| 1   |          |      |

Scale: 1"=200'  
0' 100' 200' 400'  
Date: November 22, 2022

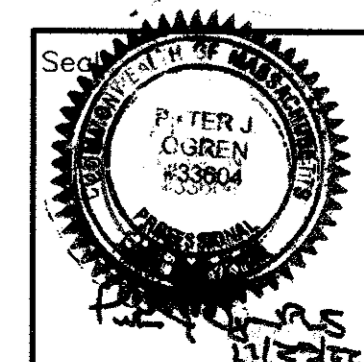
Drawing Title:

**INDEX PLAN  
25 HAVEN STREET  
MIXED-USE DEVELOPMENT  
READING, MASS.**

Drawing No.:

C1

SHEET 1 OF 8



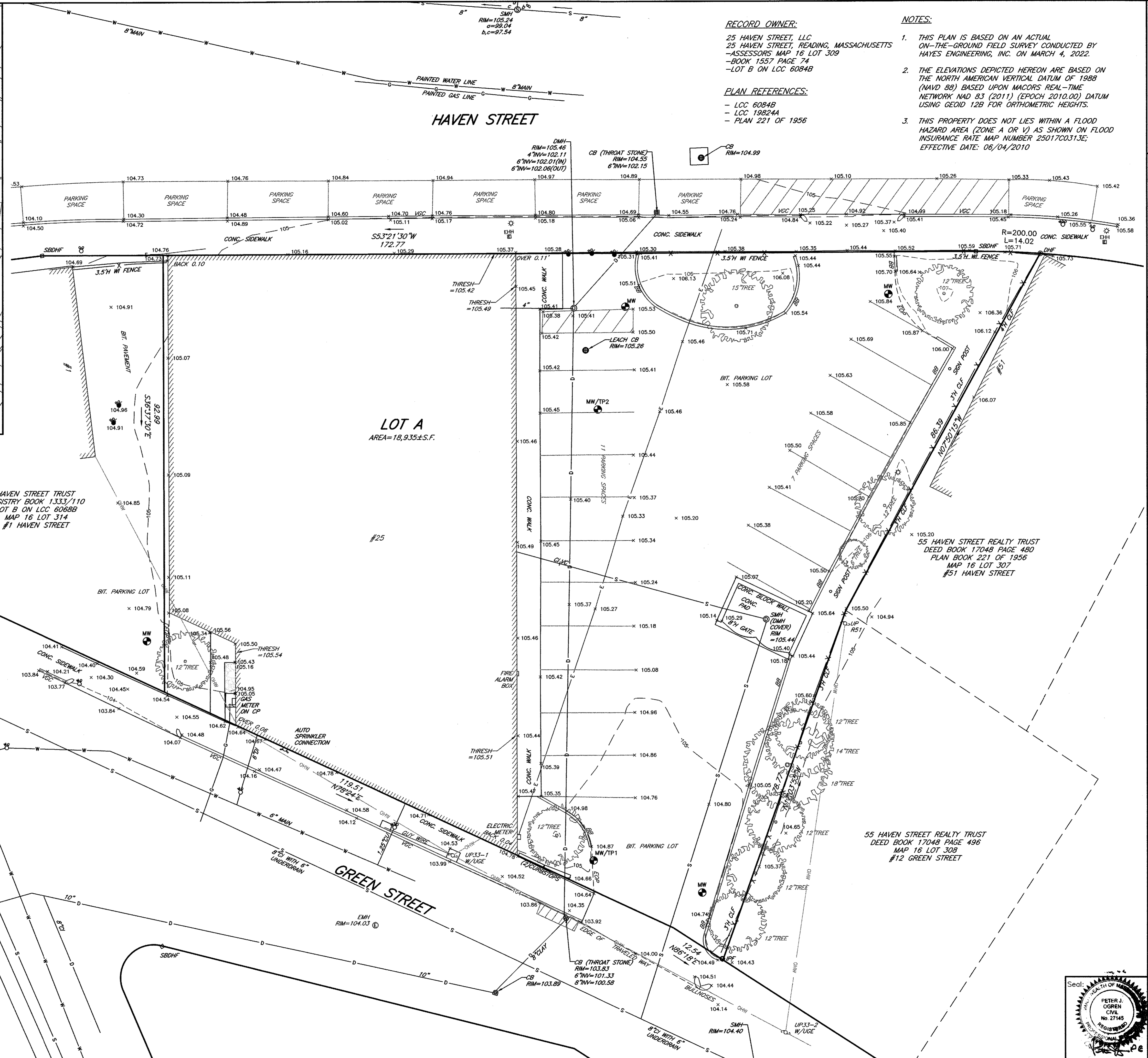
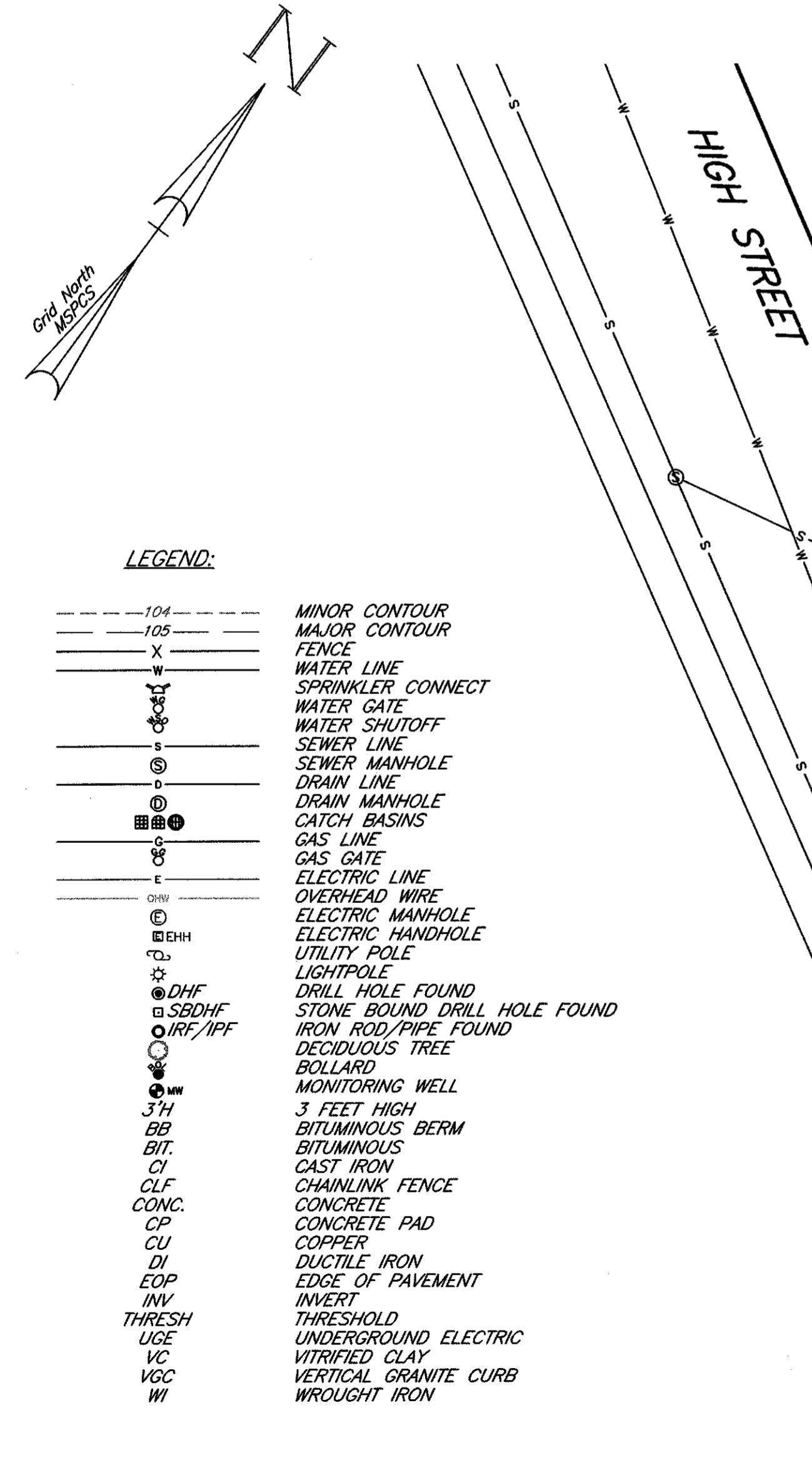
1422





LOCUS MAP:  
(1"=100')

STRUCTURES AND BOUNDARIES COMPILED FROM  
MASSMAPPER GIS INFORMATION



Prepared For:  
25 HAVEN STREET, LLC

Prepared By:  
Hayes Engineering, Inc.  
603 Salem Street  
Wakefield, MA 01880  
Ph: 781.246.2800  
Fax: 781.246.7596  
www.hayeseng.com

Design By: JC  
Drawn By: PJO  
Checked By: PJO  
Project File: REA-0419  
Comp. No: REA175  
 Issued For Permit  
 Issued For Review  
 Issued For Bid  
 Issued For Construction  
 Not For Construction

| No. | Revision | Date |
|-----|----------|------|
| 10  |          |      |
| 9   |          |      |
| 8   |          |      |
| 7   |          |      |
| 6   |          |      |
| 5   |          |      |
| 4   |          |      |
| 3   |          |      |
| 2   |          |      |
| 1   |          |      |

Scale: 1"=10'  
0' 5' 10' 20'

Date: November 22, 2022

Drawing Title:  
**EXISTING CONDITIONS PLAN  
25 HAVEN STREET  
MIXED-USE DEVELOPMENT  
READING, MASS.**

Drawing No.:  
**C2**

SHEET 2 OF 8

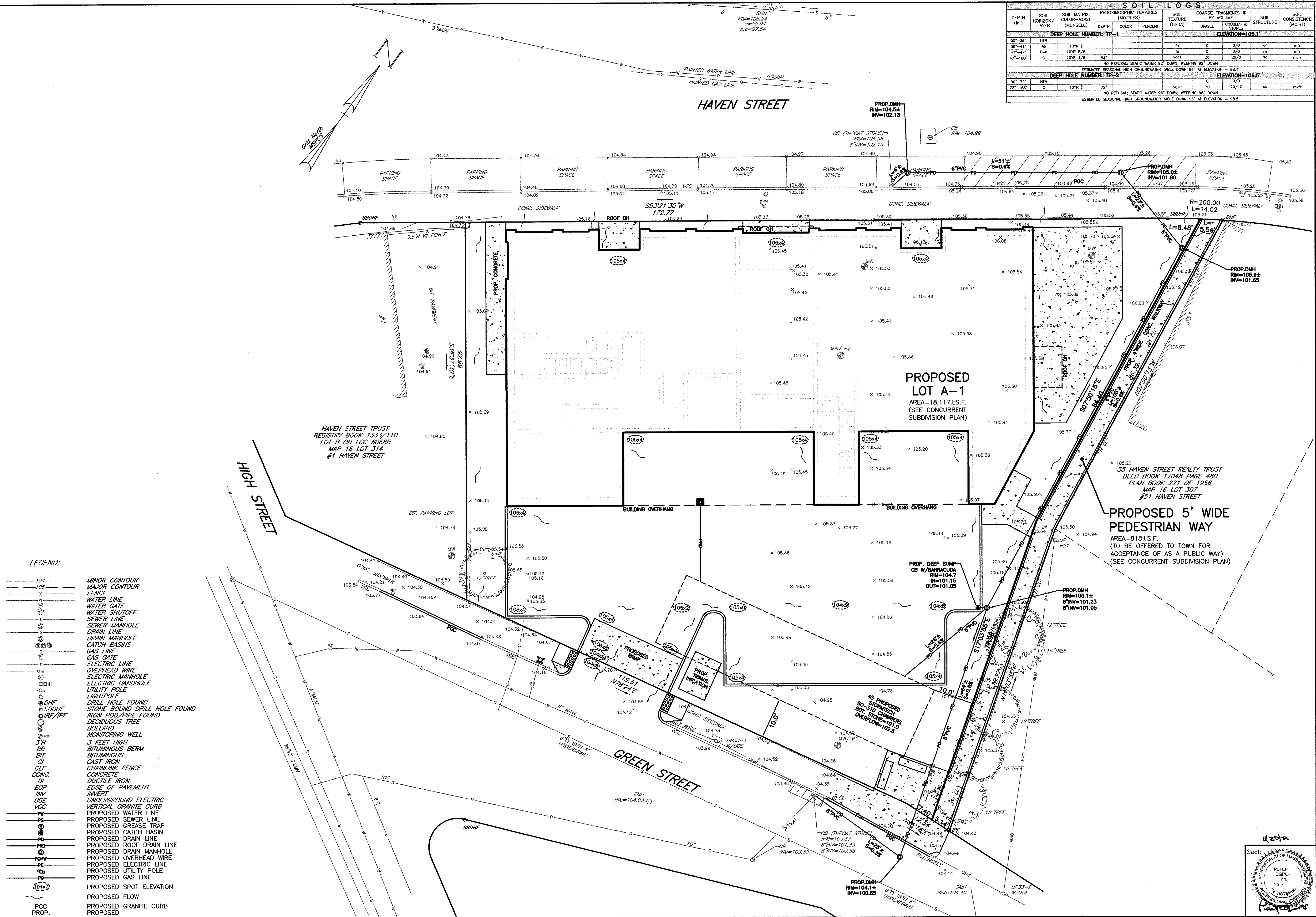












| SOIL LOGS   |                    |                                    |                                  |         |                     |  |                |                          |           |
|---|--------------------|------------------------------------|----------------------------------|---------|---------------------|--|----------------|--------------------------|-----------|
| DEPTH (ft.)   | SOIL HORIZON/LAYER | SOIL MATRIX: COLOR-MOIST (MUNSELL) | REDOXIMORPHIC FEATURES (MOTTLES) |         | SOIL TEXTURE (USDA) | COARSE FRAGMENTS % BY VOLUME (GRAVEL, TORRESILES & STONES) | SOIL STRUCTURE | SOIL CONSISTENCE (MOIST) | ELEVATION |
|   |                    |                                    | DEPTH                            | PERCENT |                     |  |                |                          |           |
| <b>DEEP HOLE NUMBER: TP-1 ELEVATION=105.1'</b>                          |                    |                                    |                                  |         |                     |  |                |                          |           |
| 00'-30"   | HM                 |                                    |                                  |         | fs                  | 0  | 0/0            | gr                       | mfr       |
| 30'-41"   | Ab                 |                                    |                                  |         | ls                  | 0  | 0/0            | m                        | mfr       |
| 41'-47"   | Bwb                |                                    |                                  |         | vs                  | 30   | 20/0           | sq                       | mfr       |
| 47'-180"  | C                  |                                    |                                  | 64"     |                     |  |                |                          |           |
| NO REFUSAL: STATIC WATER 92" DOWN; WEIRING 82" DOWN                     |                    |                                    |                                  |         |                     |  |                |                          |           |
| ESTIMATED SEASONAL HIGH GROUNDWATER TABLE DOWN 84" AT ELEVATION = 98.1' |                    |                                    |                                  |         |                     |  |                |                          |           |
| <b>DEEP HOLE NUMBER: TP-2 ELEVATION=106.5'</b>                          |                    |                                    |                                  |         |                     |  |                |                          |           |
| 00'-72"   | HM                 |                                    |                                  |         | vs                  | 0  | 0/0            |                          |           |
| 72'-168"  | C                  |                                    |                                  | 72"     |                     |  | 20/10          | sq                       | mfr       |
| NO REFUSAL: STATIC WATER 94" DOWN; WEIRING 94" DOWN                     |                    |                                    |                                  |         |                     |  |                |                          |           |
| ESTIMATED SEASONAL HIGH GROUNDWATER TABLE DOWN 96" AT ELEVATION = 98.5' |                    |                                    |                                  |         |                     |  |                |                          |           |

Prepared For:  
 25 HAVEN STREET, LLC  
 25 HAVEN STREET  
 READING, MASSACHUSETTS  
 REGISTRY BOOK 1557/74  
 ASSESSORS MAP 16 LOT 309

Prepared By:  
  
 Hayes Engineering, Inc.  
 603 Salem Street  
 Wakefield, MA 01880  
 Ph: 781.246.2800  
 Fax: 781.246.7596  
 www.hayeseng.com

Design By: JC  
 Drawn By: JC  
 Checked By: PJO  
 Project File: REA-0419  
 Comp. No: REA175  
 Issued For Permit  
 Issued For Review  
 Issued For Bid  
 Issued For Construction  
 Not For Construction

| No. | Revision | Date |
|-----|----------|------|
| 10  |          |      |
| 9   |          |      |
| 8   |          |      |
| 7   |          |      |
| 6   |          |      |
| 5   |          |      |
| 4   |          |      |
| 3   |          |      |
| 2   |          |      |
| 1   |          |      |

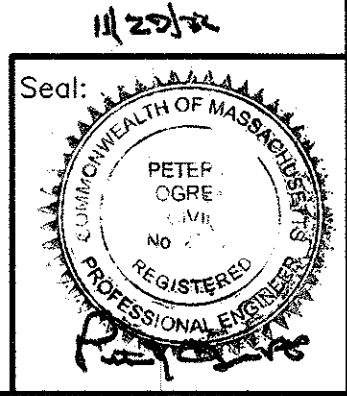
Scale: 1" = 10'  
 0' 5' 10' 20'  
 Date: November 22, 2022

Drawing Title:  
**GRADING AND DRAINAGE PLAN**  
 25 HAVEN STREET  
 MIXED-USE DEVELOPMENT  
 READING, MASS.

Drawing No.:  
**C5**


SHEET 5 OF 8

- LEGEND:**
- 104 --- MINOR CONTOUR
  - 105 --- MAJOR CONTOUR
  - X FENCE
  - W WATER LINE
  - W GATE WATER GATE
  - W SHUTOFF WATER SHUTOFF
  - S SEWER LINE
  - S MANHOLE SEWER MANHOLE
  - D DRAIN LINE
  - D MANHOLE DRAIN MANHOLE
  - C CATCH BASINS
  - G GAS LINE
  - G GATE GAS GATE
  - E ELECTRIC LINE
  - E WIRE OVERHEAD WIRE
  - EMH ELECTRIC MANHOLE
  - EMH HANDHOLE ELECTRIC HANDHOLE
  - U UTILITY POLE
  - L LIGHTPOLE
  - DH FOUND DRILL HOLE FOUND
  - SBDF FOUND STONE BOUND DRILL HOLE FOUND
  - IRP FOUND IRON ROD/PIPE FOUND
  - D TREE DECIDUOUS TREE
  - B BOLLARD
  - MW MONITORING WELL
  - 3' H 3 FEET HIGH
  - BB BITUMINOUS BERM
  - BIT BITUMINOUS
  - CI CAST IRON CHAINLINK FENCE
  - CONC CONCRETE
  - DI DUCTILE IRON
  - EOP EDGE OF PAVEMENT
  - INV INVERT
  - UGE UNDERGROUND ELECTRIC
  - V VERTICAL GRANITE CURB
  - W PROPOSED WATER LINE
  - PS PROPOSED SEWER LINE
  - PT PROPOSED GREASE TRAP
  - PCB PROPOSED CATCH BASIN
  - PD PROPOSED DRAIN LINE
  - PRD PROPOSED ROOF DRAIN LINE
  - PDM PROPOSED DRAIN MANHOLE
  - PE PROPOSED OVERHEAD WIRE
  - PEL PROPOSED ELECTRIC LINE
  - PU PROPOSED UTILITY POLE
  - PG PROPOSED GAS LINE
  - PEV PROPOSED SPOT ELEVATION
  - PROP. FLOW PROPOSED FLOW
  - PROP. GRANITE CURB PROPOSED GRANITE CURB
  - PROP. PROPOSED



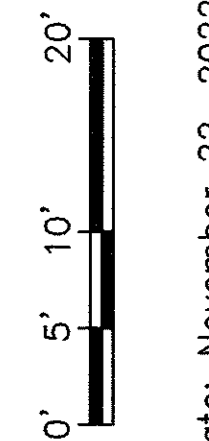


Prepared For:  
 25 HAVEN STREET, LLC  
 25 HAVEN STREET  
 READING, MASSACHUSETTS  
 REGISTRY BOOK 1557/74  
 ASSESSORS MAP 16 LOT 309

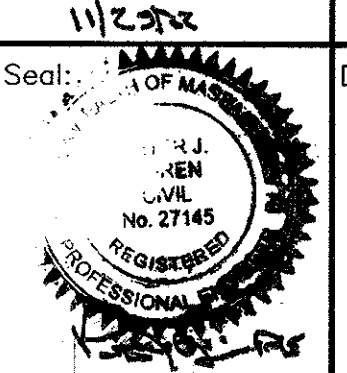
Prepared By:  
  
 Hayes Engineering, Inc.  
 603 Salem Street  
 Waltham, MA 01880  
 Ph: 781.246.2800  
 Fax: 781.246.7596  
 www.hayeseng.com

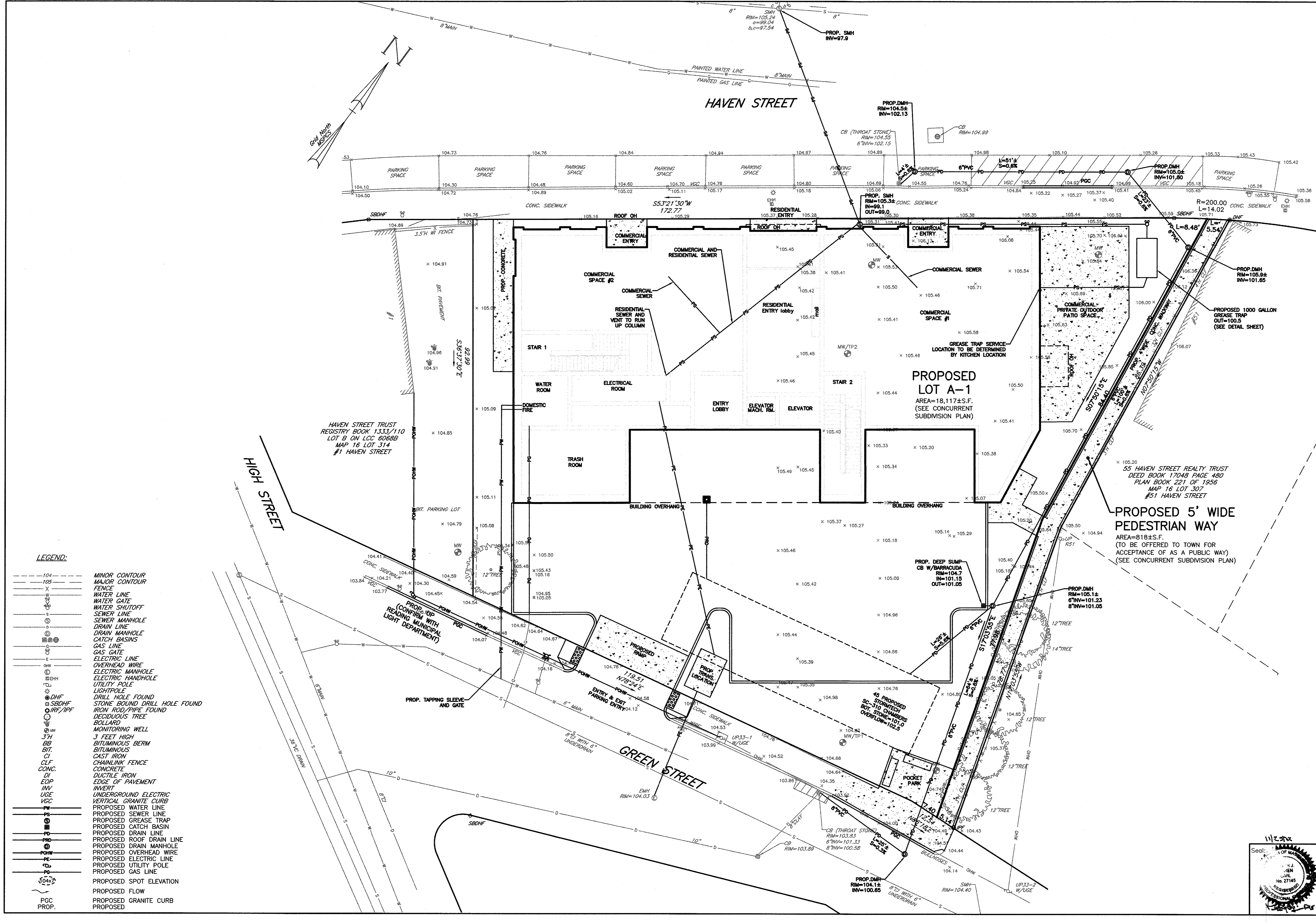
Design By: JG  
 Drawn By: JG  
 Checked By: PJO  
 Project File: REA-0419  
 Comp. No: REA175  
 Issued For Permit  
 Issued For Review  
 Issued For Bid  
 Issued For Construction  
 Not For Construction

| No. | Revision | Date |
|-----|----------|------|
| 10  |          |      |
| 9   |          |      |
| 8   |          |      |
| 7   |          |      |
| 6   |          |      |
| 5   |          |      |
| 4   |          |      |
| 3   |          |      |
| 2   |          |      |
| 1   |          |      |

Scale: 1"=10'  
  
 Date: November 22, 2022

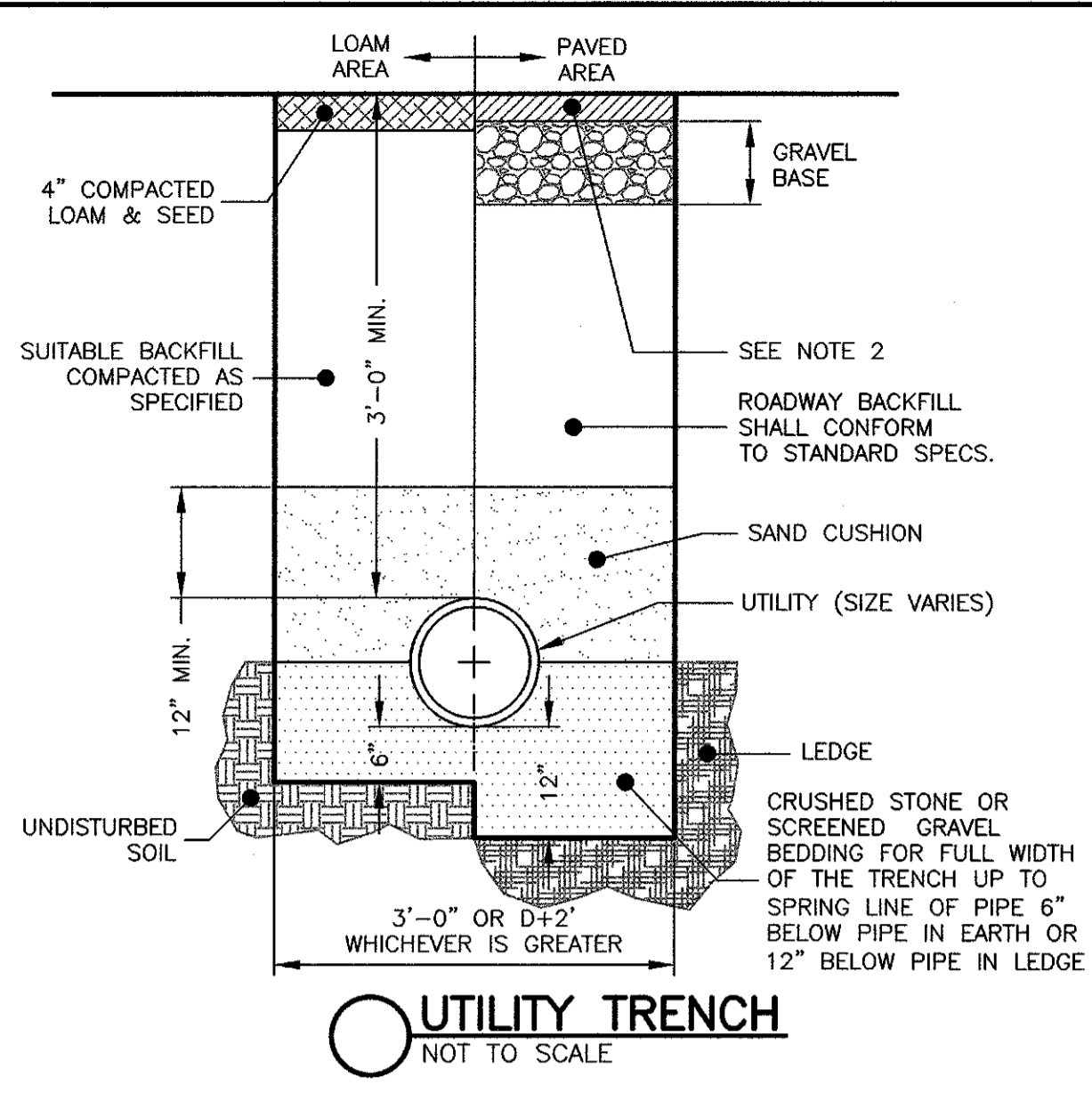
Drawing Title:  
 UTILITY PLAN  
 25 HAVEN STREET  
 MIXED-USE DEVELOPMENT  
 READING, MASS.

Drawing No.:  
  
 C6  
 SHEET 6 OF 8

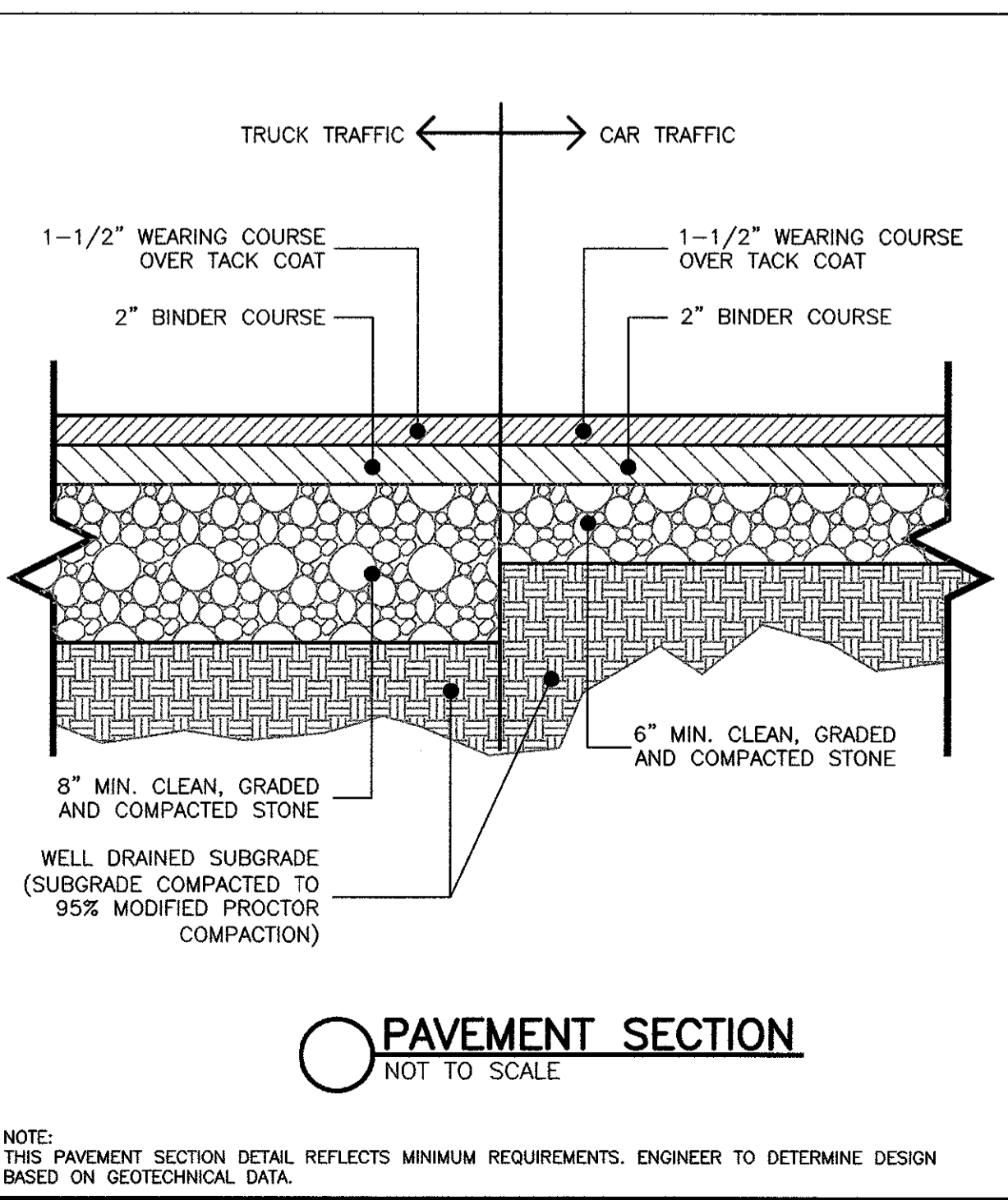
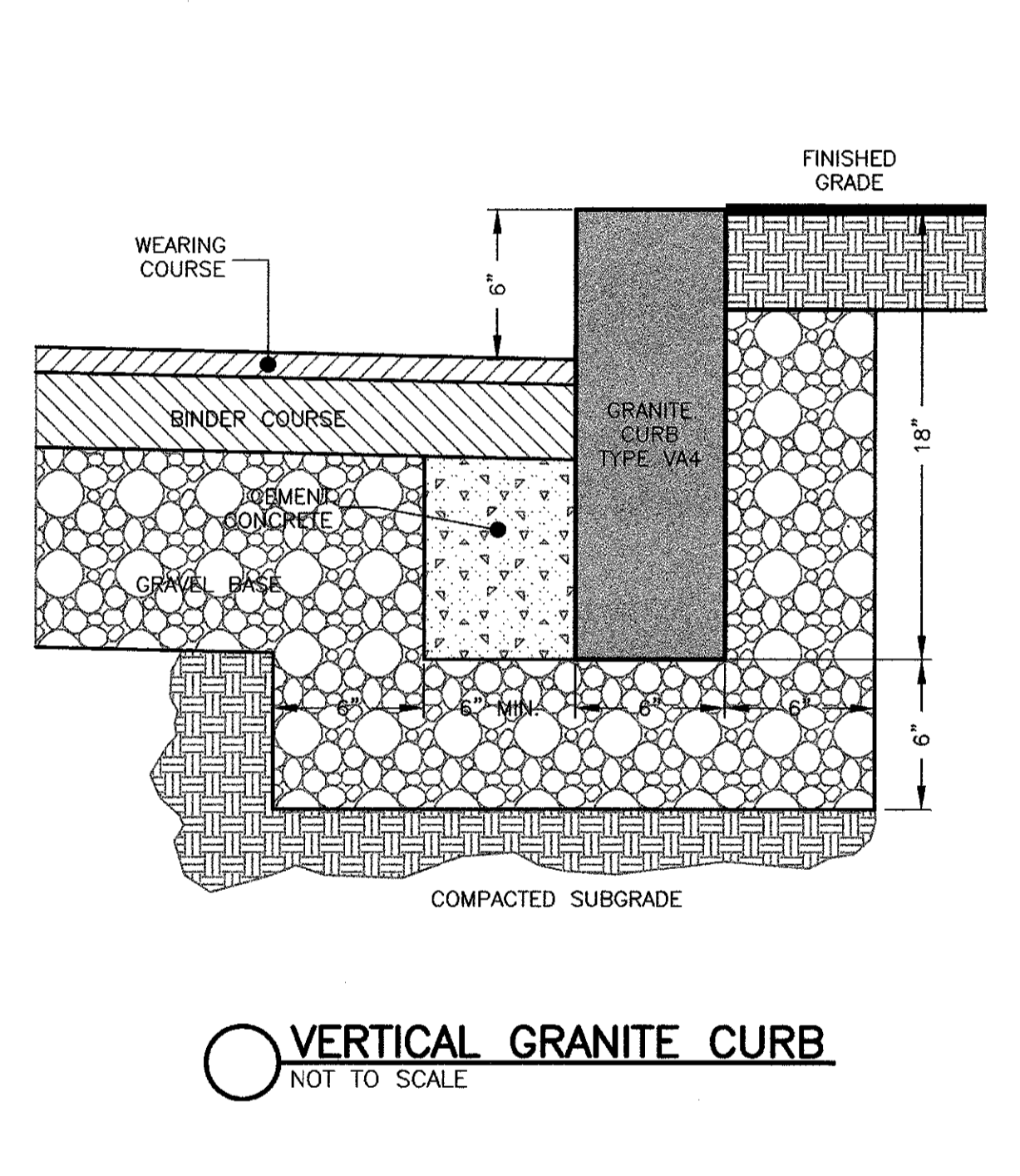


- LEGEND:**
- 104 --- MINOR CONTOUR
  - 105 --- MAJOR CONTOUR
  - FENCE
  - WATER LINE
  - WATER GATE
  - WATER SHUTOFF
  - SEWER LINE
  - SEWER MANHOLE
  - DRAIN LINE
  - DRAIN MANHOLE
  - CATCH BASIN
  - GAS LINE
  - GAS GATE
  - ELECTRIC LINE
  - OVERHEAD WIRE
  - ELECTRIC MANHOLE
  - ELECTRIC HANDHOLE
  - UTILITY POLE
  - LIGHTPOLE
  - DRILL HOLE FOUND
  - STONE BOUND DRILL HOLE FOUND
  - IRON ROD/PIPE FOUND
  - DECIDUOUS TREE
  - BOLLARD
  - MONITORING WELL
  - 3' H HIGH BITUMINOUS BERM
  - BIT. BITUMINOUS
  - CI CAST IRON CHAINLINK FENCE
  - CONC. CONCRETE
  - DI DUCTILE IRON
  - EOP EDGE OF PAVEMENT
  - INV INVERT
  - UNDERGROUND ELECTRIC
  - VERTICAL GRANITE CURB
  - PROPOSED WATER LINE
  - PROPOSED SEWER LINE
  - PROPOSED GREASE TRAP
  - PROPOSED CATCH BASIN
  - PROPOSED DRAIN LINE
  - PROPOSED ROOF DRAIN LINE
  - PROPOSED DRAIN MANHOLE
  - PROPOSED OVERHEAD WIRE
  - PROPOSED ELECTRIC LINE
  - PROPOSED UTILITY POLE
  - PROPOSED GAS LINE
  - PROPOSED SPOT ELEVATION
  - PROPOSED FLOW
  - PROPOSED GRANITE CURB
  - PROPOSED

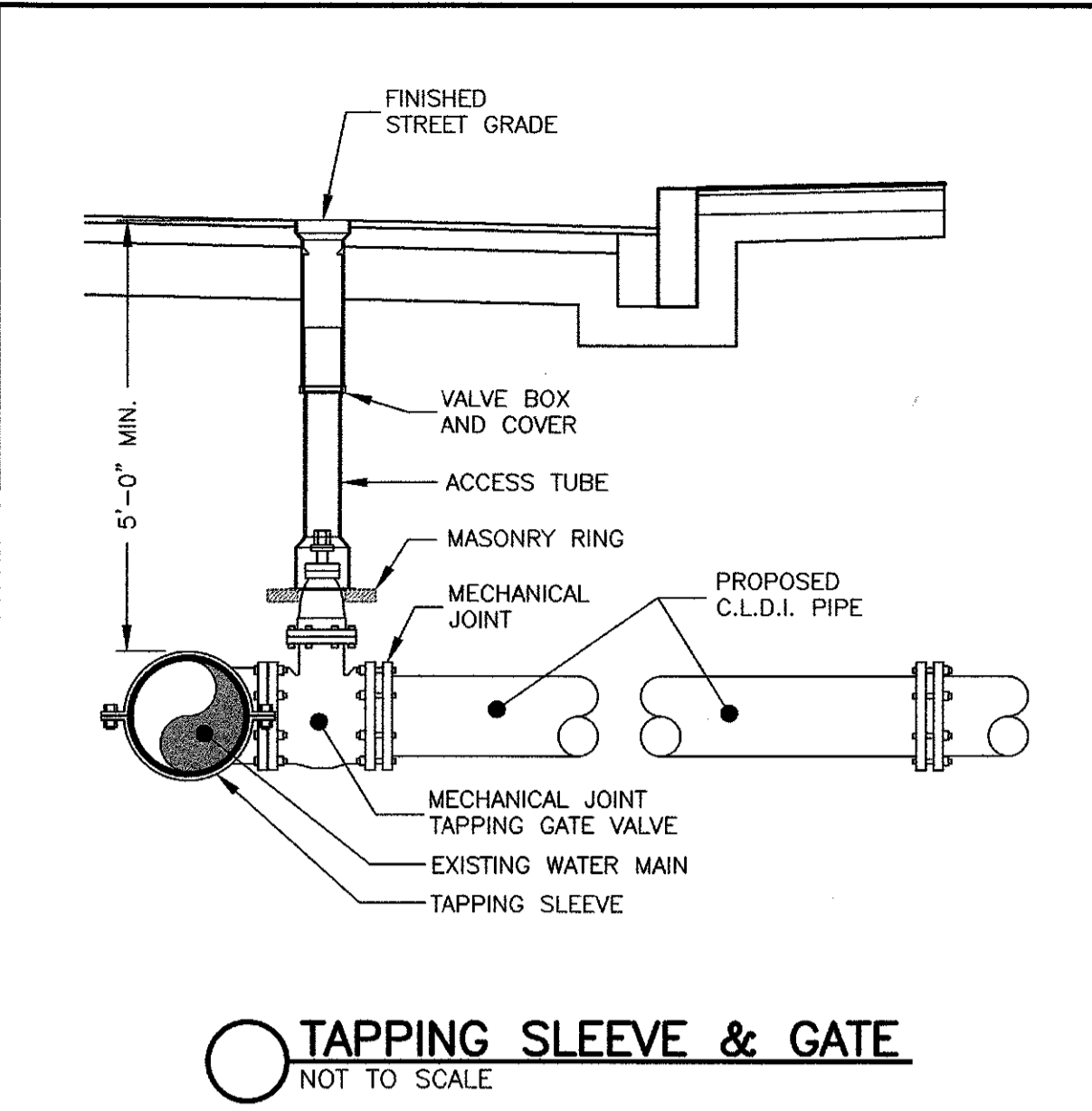




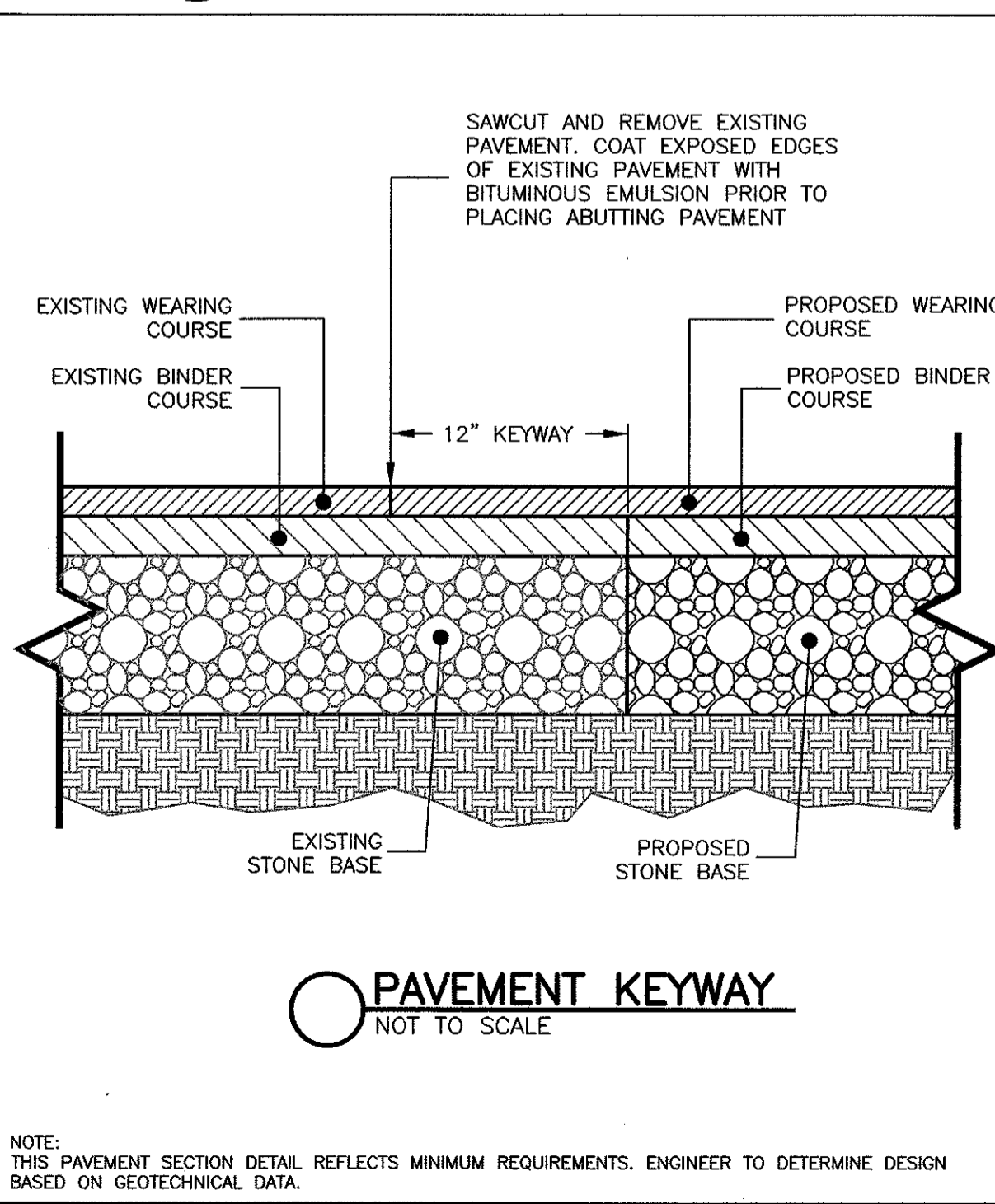
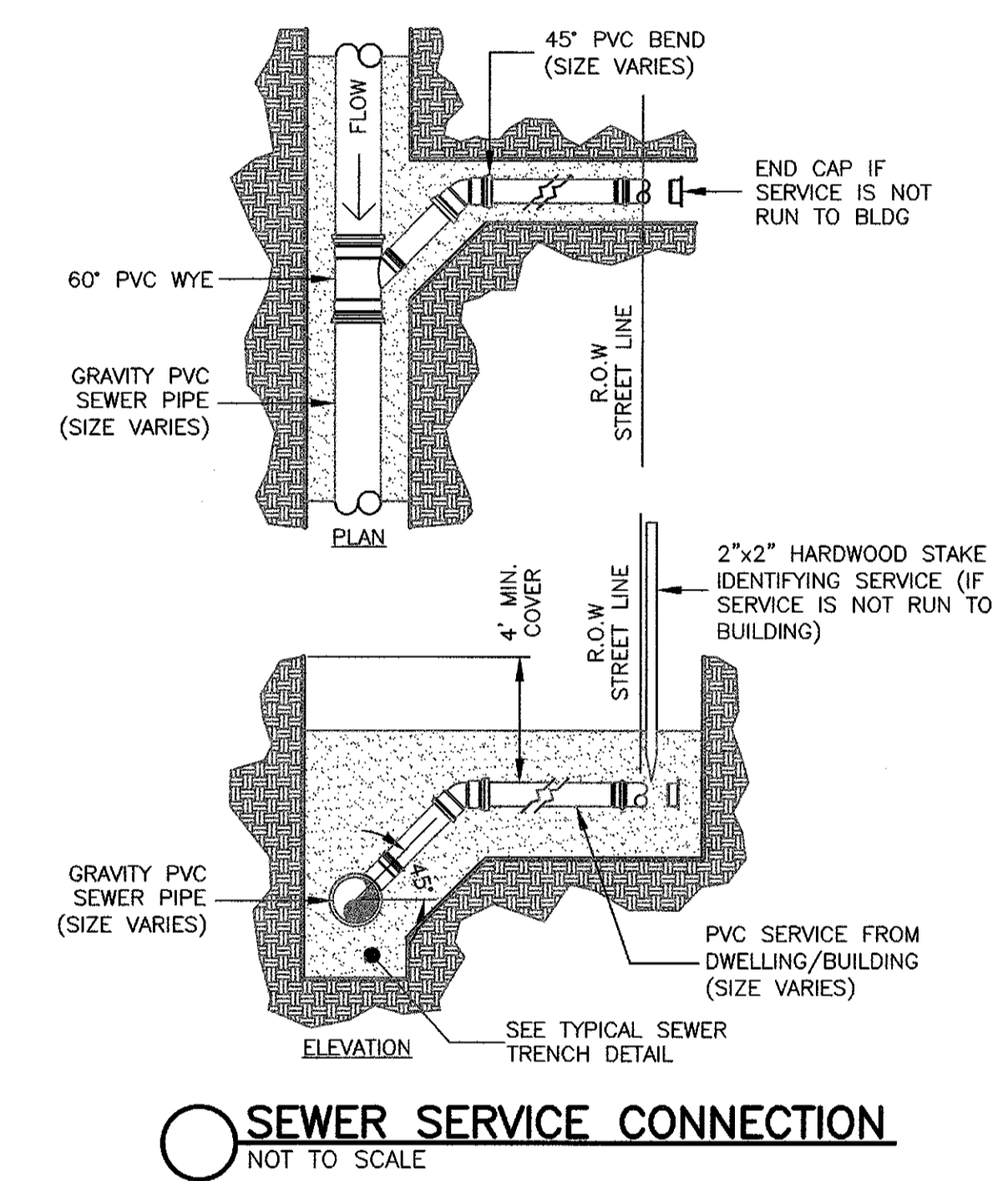
NOTES:  
 1. ALL MATERIAL SHALL CONFORM TO CITY/TOWN OF DEPARTMENT OF PUBLIC WORKS.  
 2. NEW ROADWAY CONSTRUCTION SHALL CONFORM TO CITY/TOWN SPECIFICATIONS.  
 3. IN LIEU OF THE 12" GRAVEL COURSE AND 4" OF CRUSHED GRAVEL, 18" OF CRUSHED GRAVEL OR RECLAIMED STABILIZED BASE MAY BE USED AS A BASE FOR THE PAVEMENT REPAIR.  
 4. MATERIAL SHALL BE REPLACED IN KIND WHENEVER POSSIBLE.  
 5. A MINIMUM 2' CUTBACK IS REQUIRED AT THE TOP OF THE TRENCH WALL OVER UNDISTURBED MATERIAL.



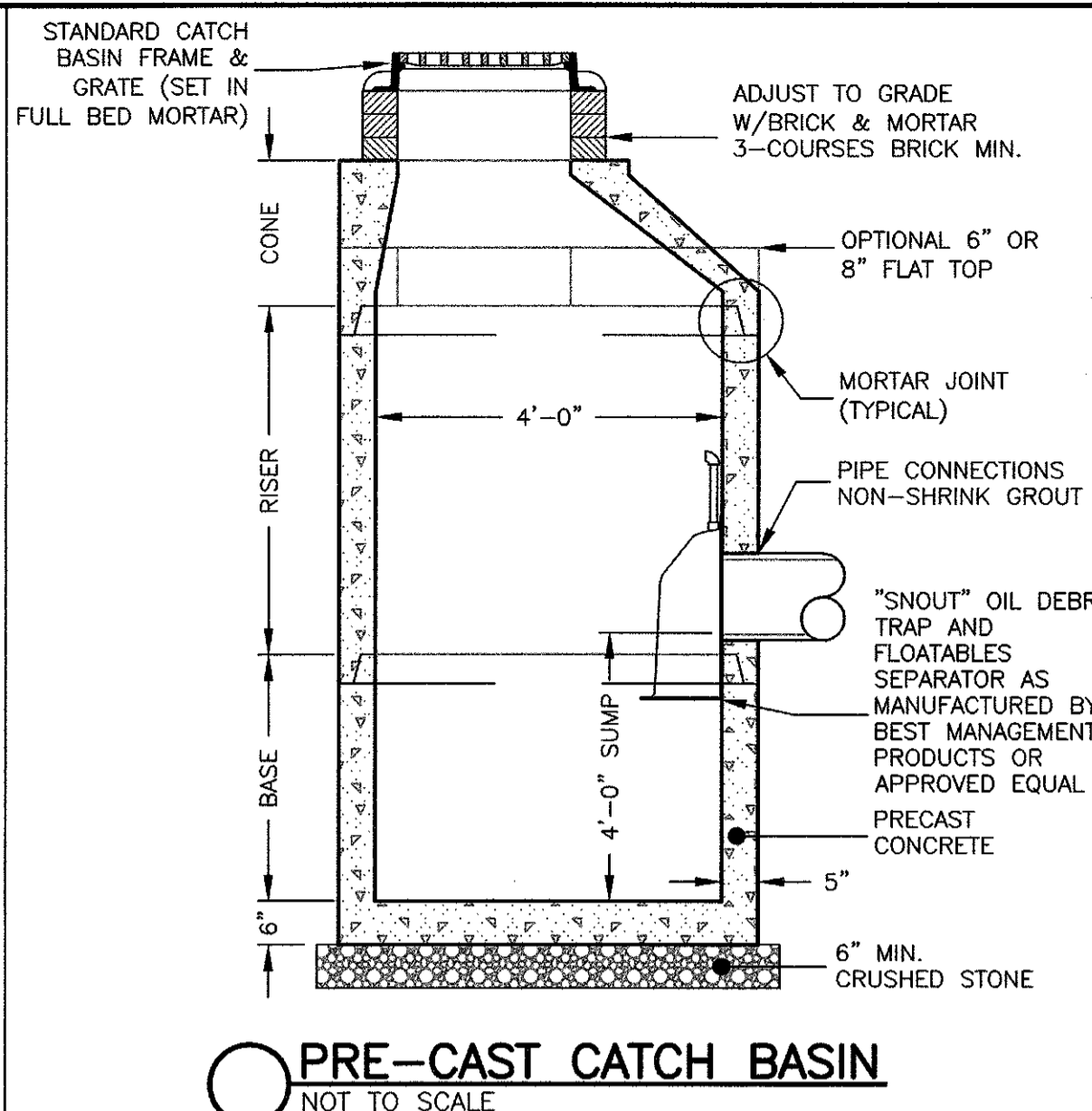
NOTE: THIS PAVEMENT SECTION DETAIL REFLECTS MINIMUM REQUIREMENTS. ENGINEER TO DETERMINE DESIGN BASED ON GEOTECHNICAL DATA.



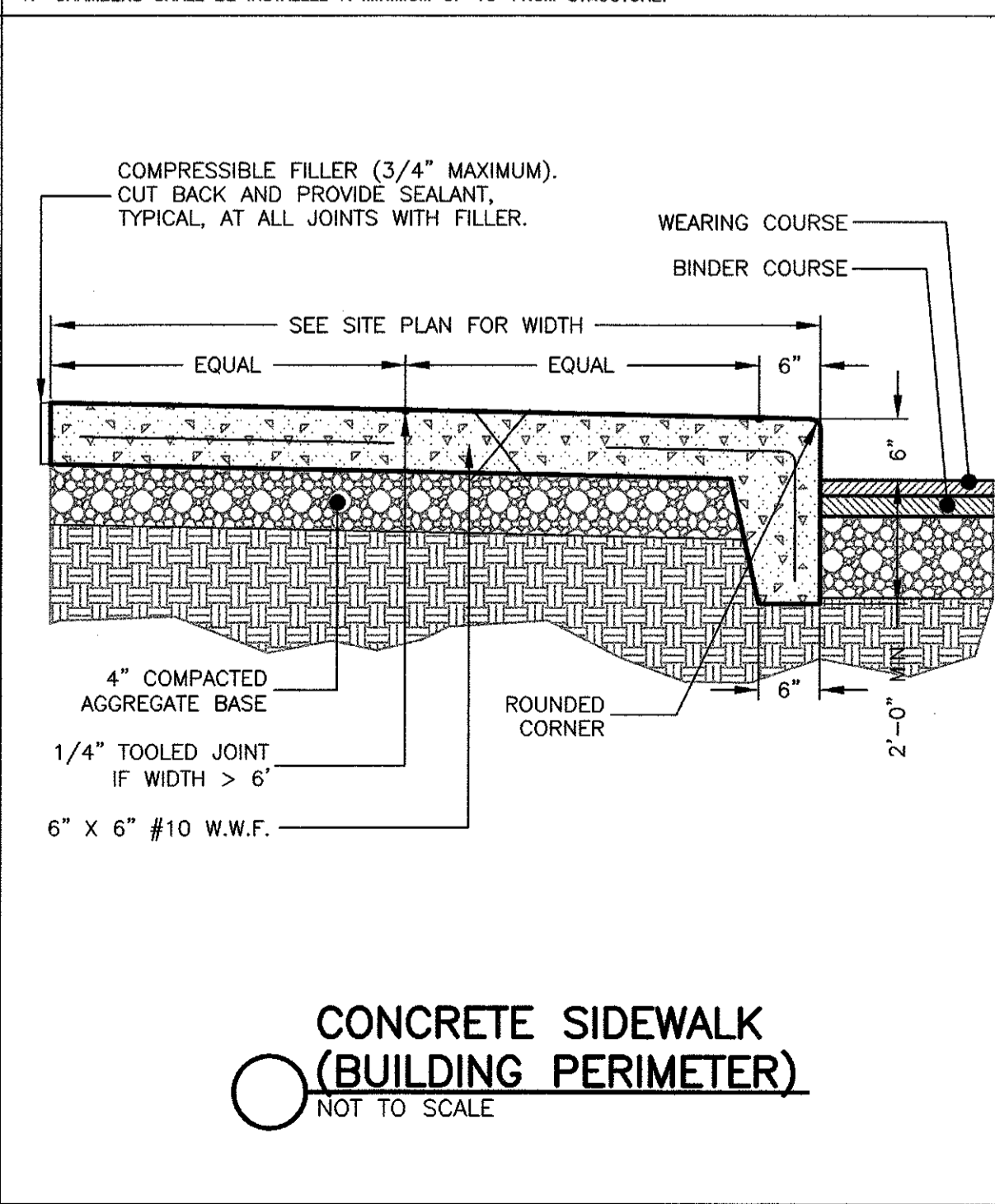
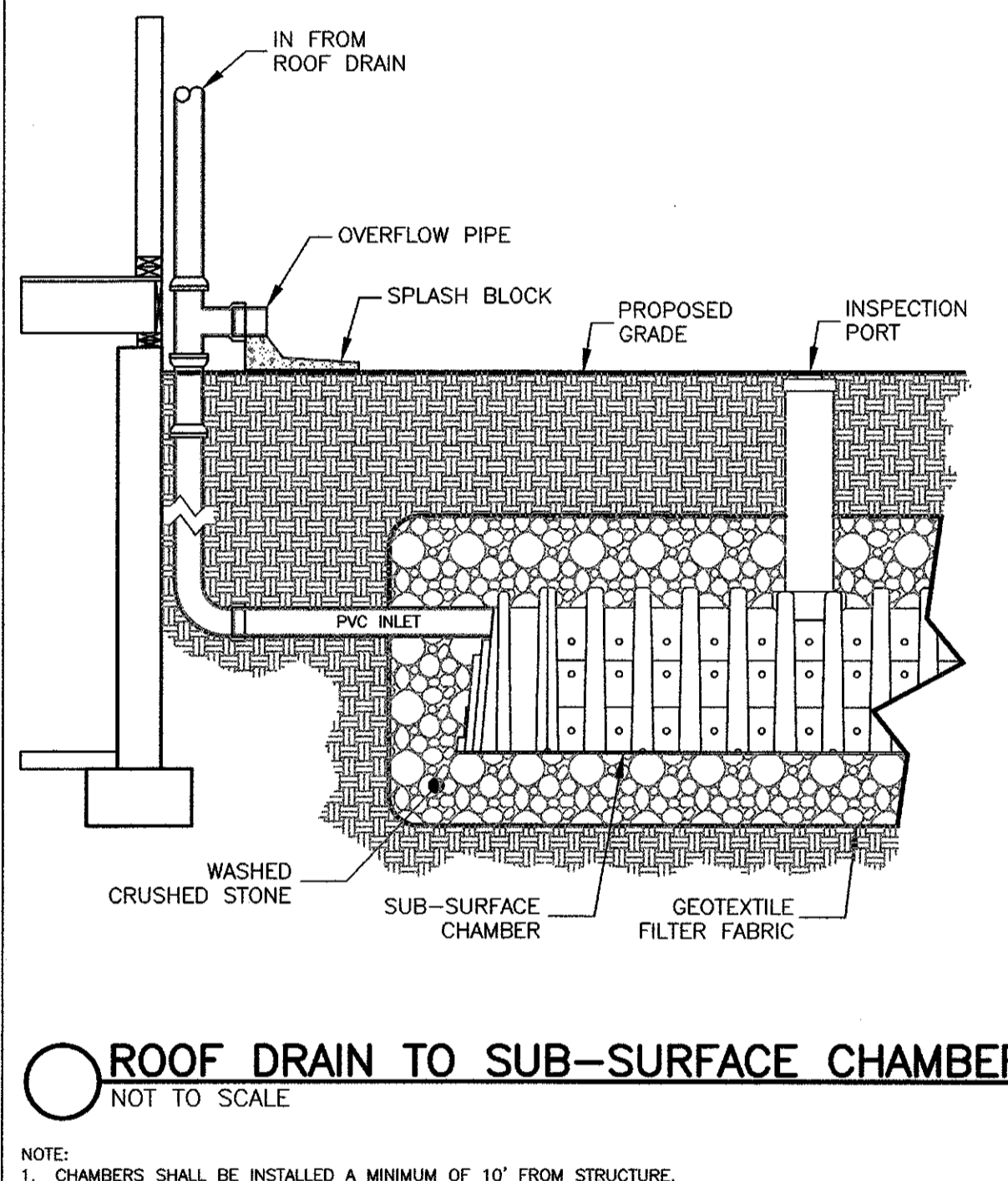
NOTES:  
 1. CONCRETE THRUST BLOCK TO BE USED ONLY WHERE IT WILL BEAR ON UNDISTURBED EARTH.  
 2. USE RESTRAINED JOINT FITTINGS OR TIE RODS WHERE CONCRETE THRUST BLOCK IS UNACCEPTABLE.  
 3. SIZE OF BLOCK OR MEGALUG TO BE DESIGNED FOR SPECIFIC CONDITIONS.



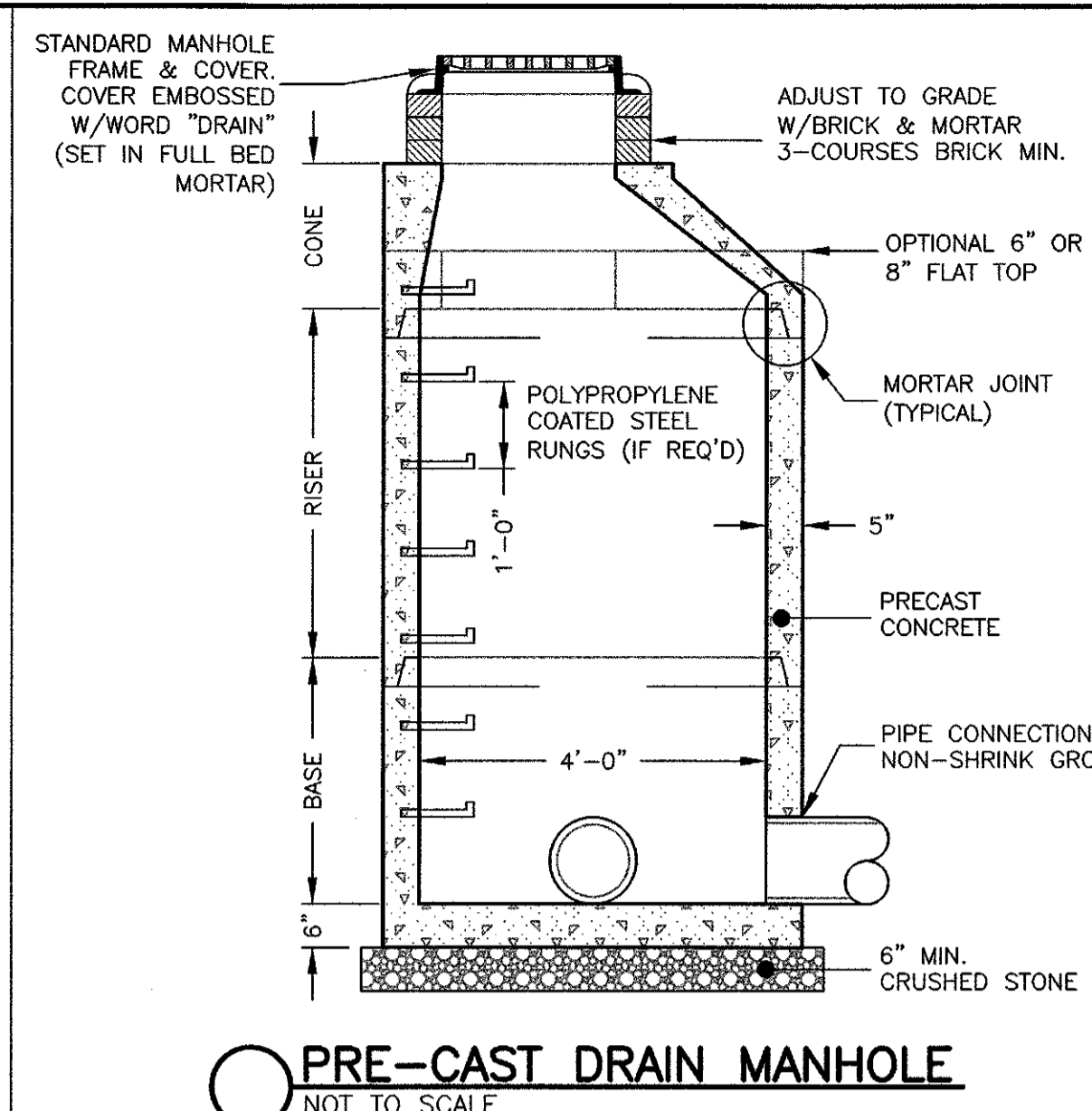
NOTE: THIS PAVEMENT SECTION DETAIL REFLECTS MINIMUM REQUIREMENTS. ENGINEER TO DETERMINE DESIGN BASED ON GEOTECHNICAL DATA.



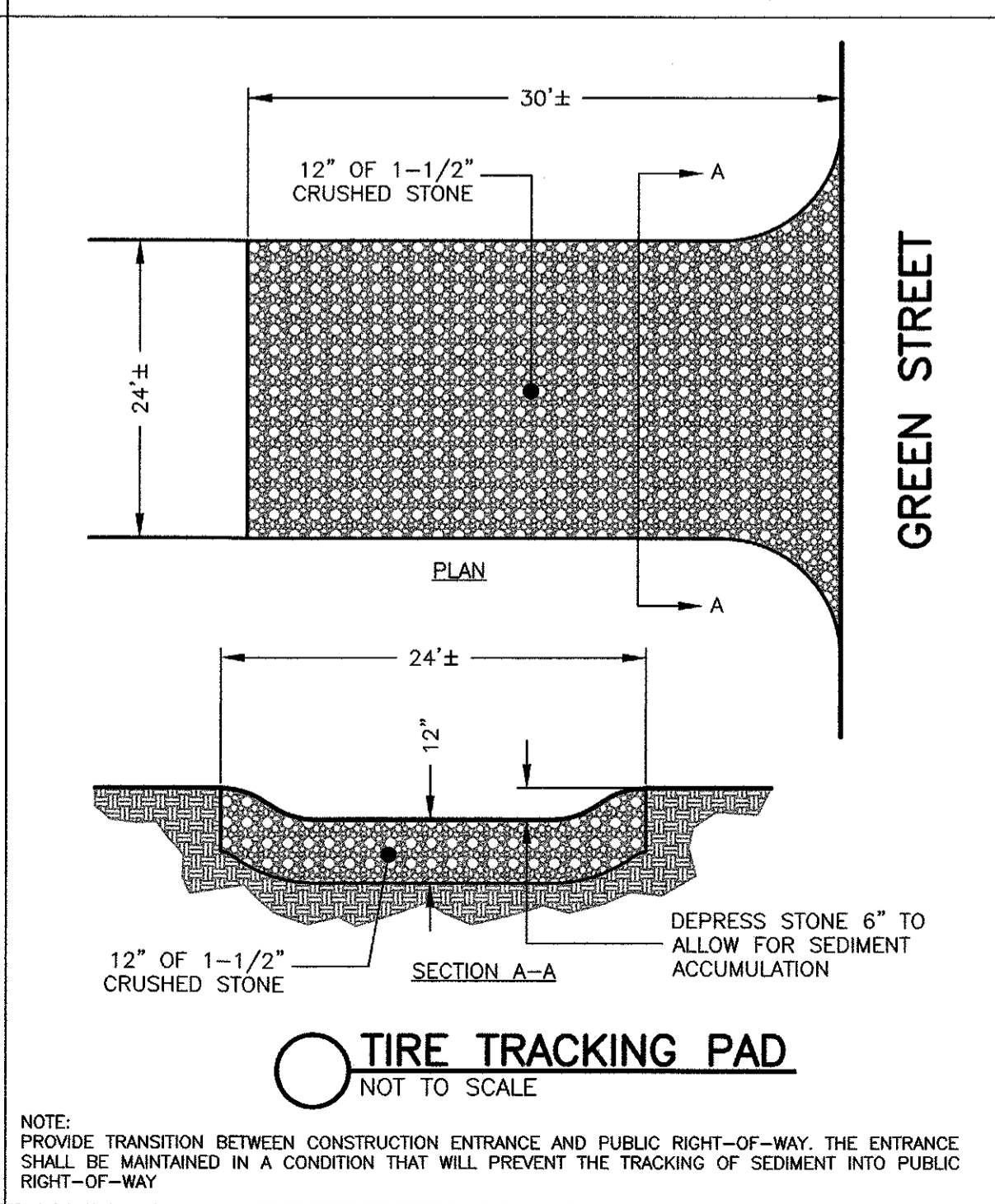
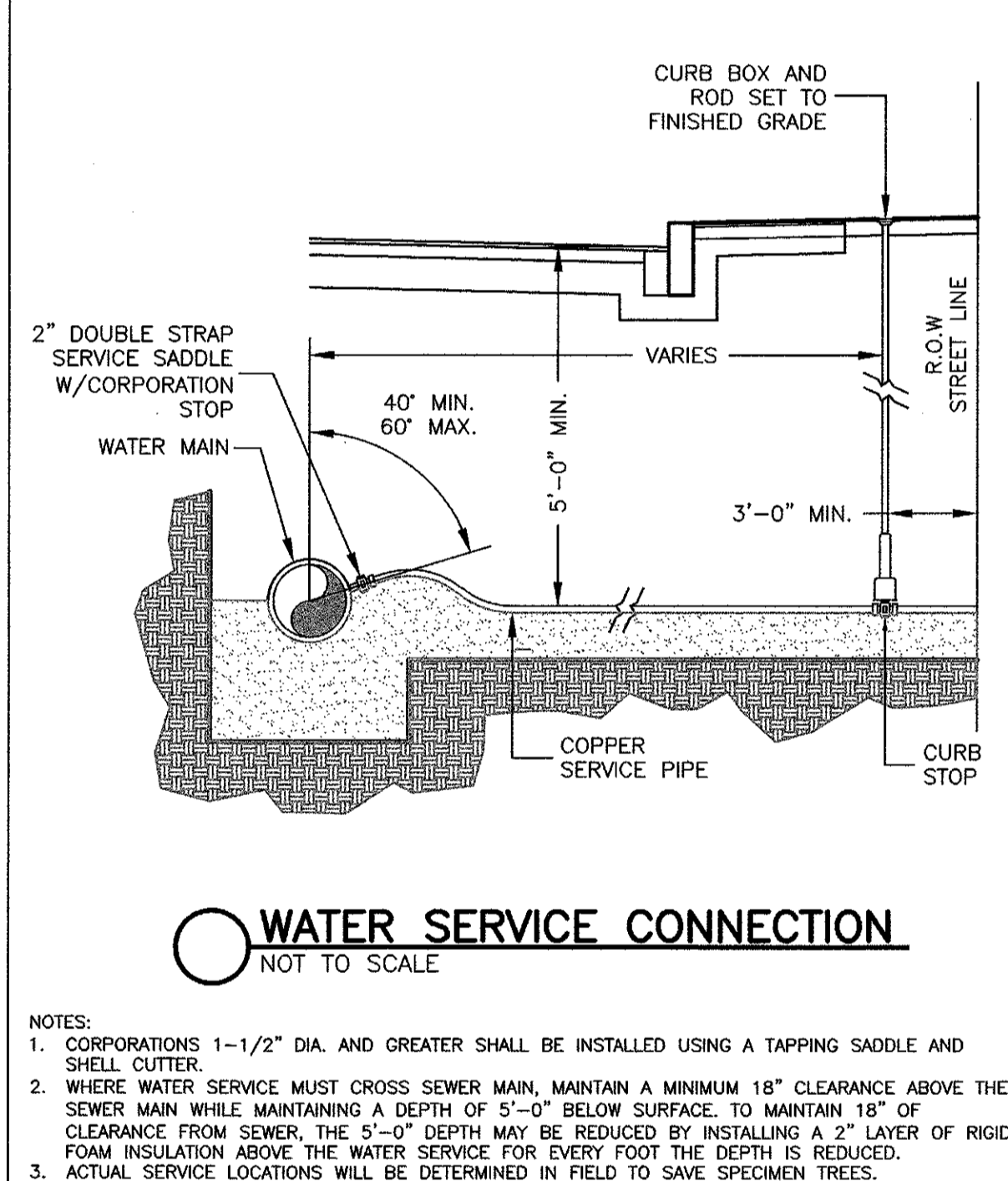
NOTES:  
 1. CONCRETE: 4,000 PSI MINIMUM AFTER 28 DAYS.  
 2. REINFORCED STEEL CONFORMS TO LATEST ASTM A185 SPEC. 0.12 SQ. IN./LINEAL FT. AND 0.12 SQ. IN. (BOTH WAYS) BASE BOTTOM.  
 3. H-20 DESIGN LOADING PER AASHTO HS-20-44; ASTM C478 SPEC FOR "PRECAST REINFORCED CONCRETE MANHOLE SECTIONS."



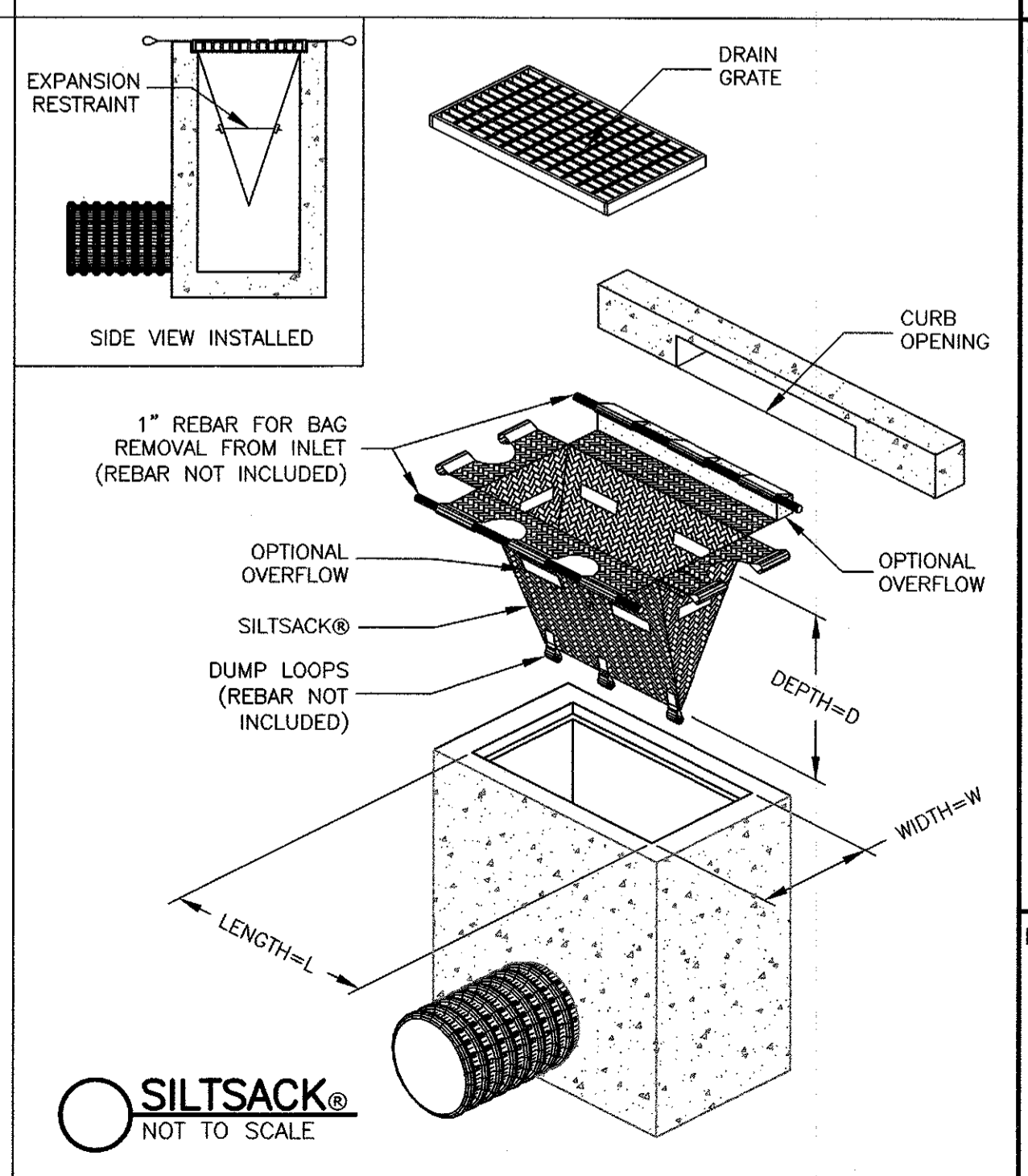
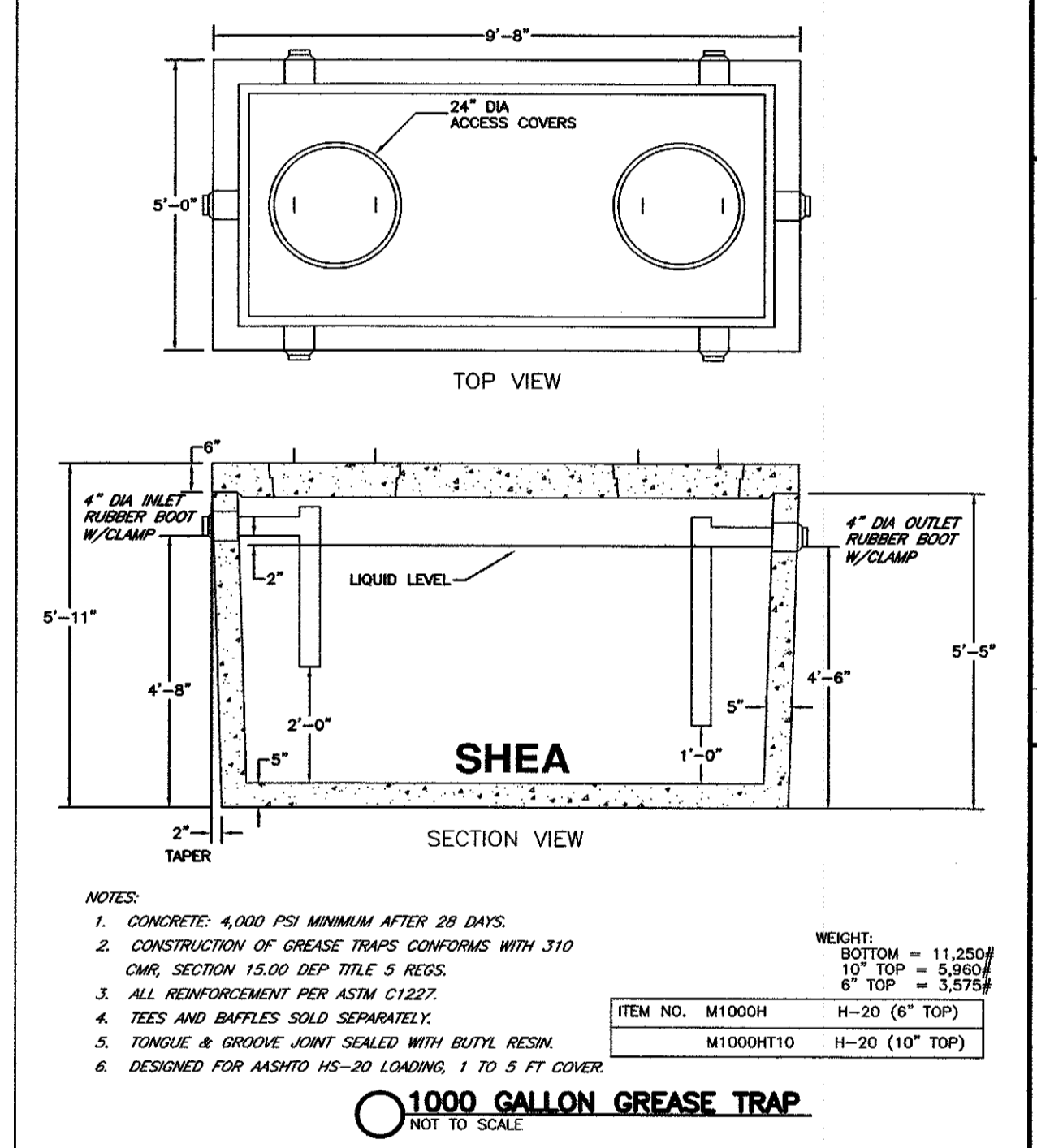
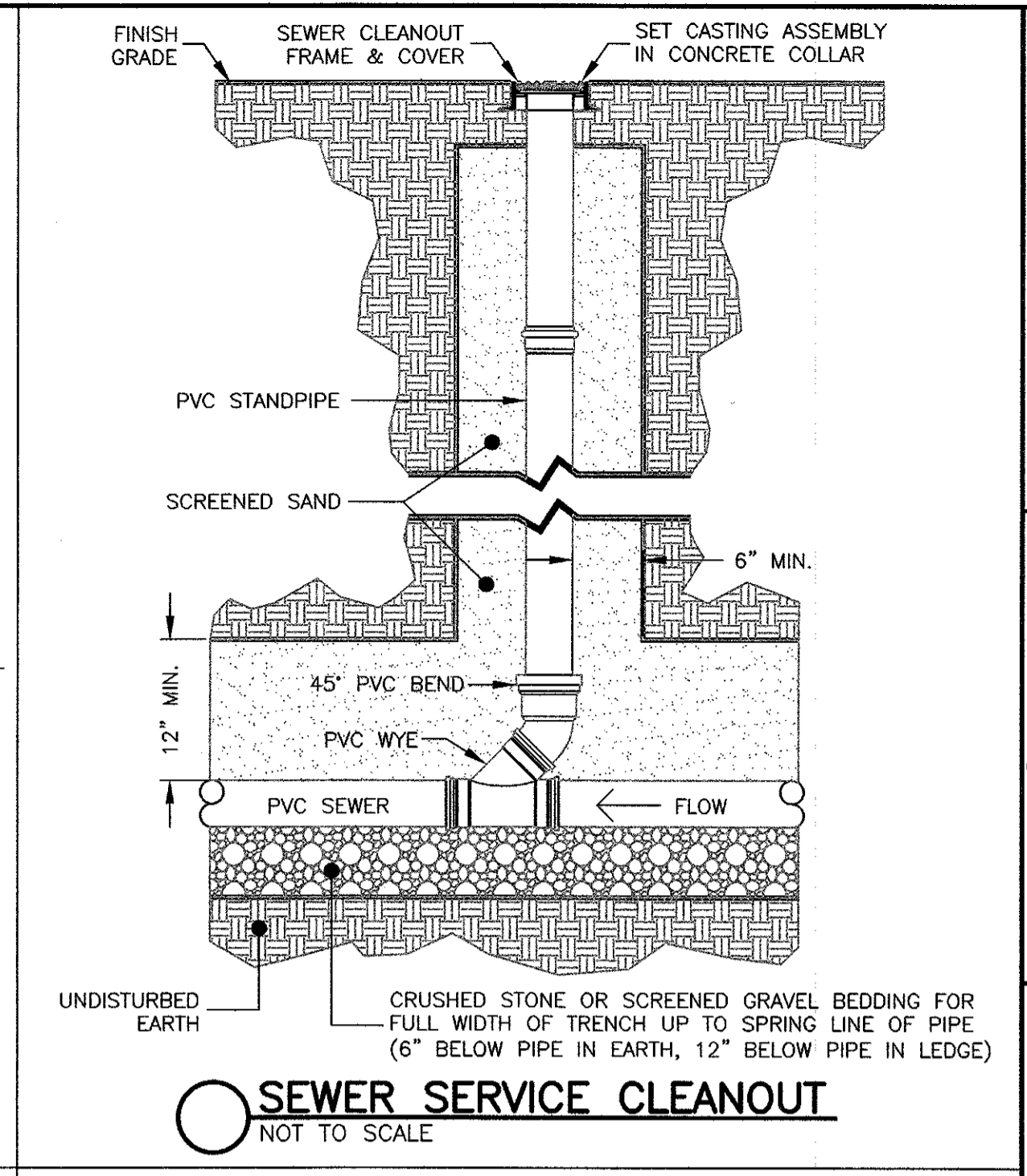
NOTE: CHAMBERS SHALL BE INSTALLED A MINIMUM OF 10' FROM STRUCTURE.



NOTES:  
 1. CONCRETE: 4,000 PSI MINIMUM AFTER 28 DAYS.  
 2. REINFORCED STEEL CONFORMS TO LATEST ASTM A185 SPEC. 0.12 SQ. IN./LINEAL FT. AND 0.12 SQ. IN. (BOTH WAYS) BASE BOTTOM.  
 3. H-20 DESIGN LOADING PER AASHTO HS-20-44; ASTM C478 SPEC FOR "PRECAST REINFORCED CONCRETE MANHOLE SECTIONS."



NOTE: PROVIDE TRANSITION BETWEEN CONSTRUCTION ENTRANCE AND PUBLIC RIGHT-OF-WAY. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT THE TRACKING OF SEDIMENT INTO PUBLIC RIGHT-OF-WAY.



NOTE: PROVIDE TRANSITION BETWEEN CONSTRUCTION ENTRANCE AND PUBLIC RIGHT-OF-WAY. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT THE TRACKING OF SEDIMENT INTO PUBLIC RIGHT-OF-WAY.

Prepared For:  
 25 HAVEN STREET, LLC  
 25 HAVEN STREET  
 READING, MASSACHUSETTS  
 REGISTRY BOOK 1557/74  
 ASSESSORS MAP 16 LOT 309

Prepared By:  
 Haysee Engineering, Inc.  
 603 Salem Street  
 Wakefield, MA 01880  
 Ph: 781.246.2800  
 Fax: 781.246.7596  
 www.hayseeeng.com

Design By: JG  
 Drawn By: JG  
 Checked By: PJO  
 Project File: REA-0419  
 Comp. No: REA175  
 Issued For Permit  
 Issued For Review  
 Issued For Bid  
 Issued For Construction  
 Not For Construction

| No. | Revision | Date |
|-----|----------|------|
| 10  |          |      |
| 9   |          |      |
| 8   |          |      |
| 7   |          |      |
| 6   |          |      |
| 5   |          |      |
| 4   |          |      |
| 3   |          |      |
| 2   |          |      |
| 1   |          |      |

Scale: NOT TO SCALE  
 DATE: NOVEMBER 22, 2022

Drawing Title:  
 25 HAVEN STREET  
 MIXED-USE DEVELOPMENT  
 READING, MASS.

Drawing No.:  
 C7





### SC-310 STORMTECH CHAMBER SPECIFICATIONS

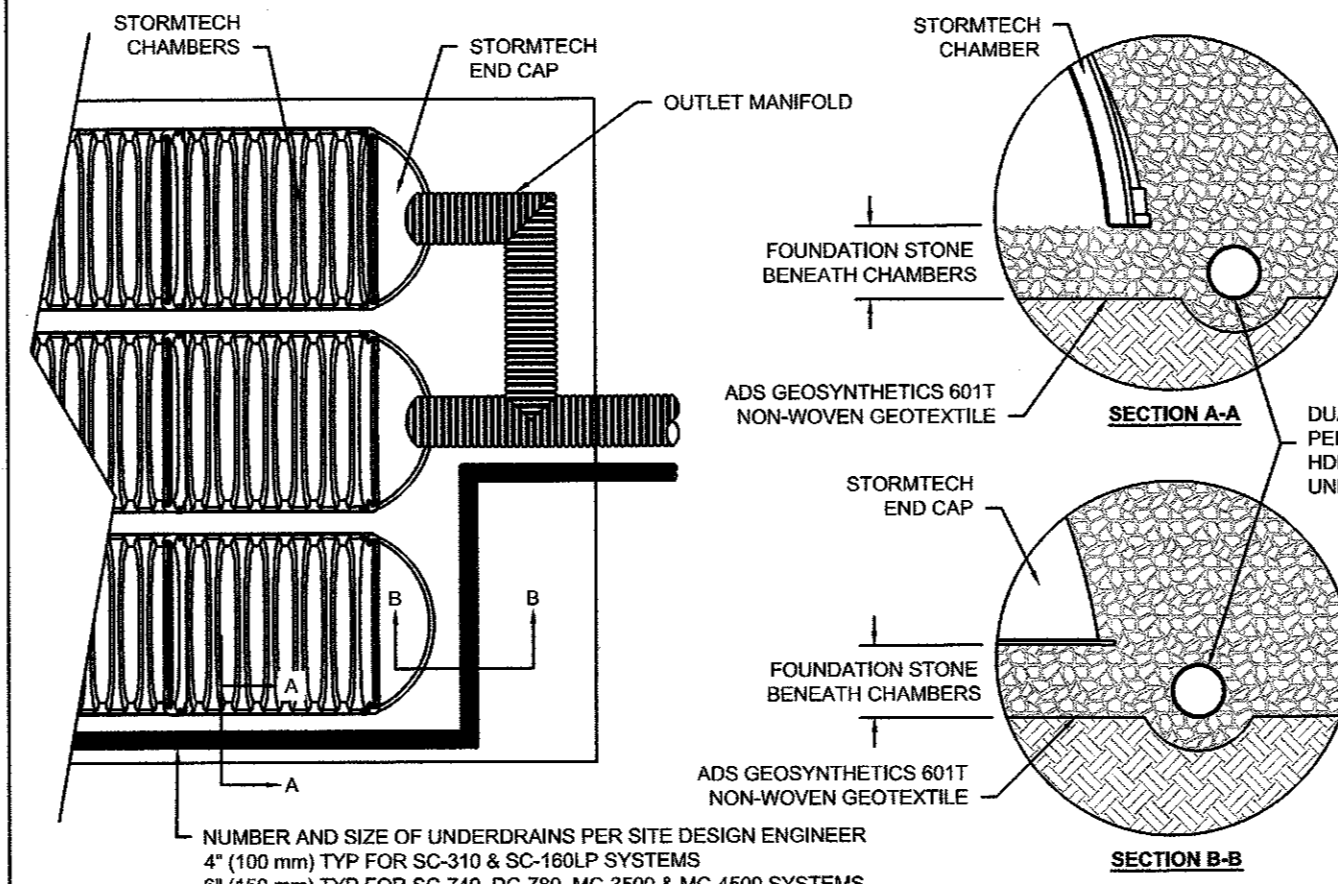
- CHAMBERS SHALL BE STORMTECH SC-310.
- CHAMBERS SHALL BE ARCH-SHAPED AND SHALL BE MANUFACTURED FROM VIRGIN, IMPACT-MODIFIED POLYPROPYLENE OR POLYETHYLENE COPOLYMERS.
- CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2922 (POLETHYLENE) OR ASTM F2418-16a (POLYPROPYLENE), "STANDARD SPECIFICATION FOR CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
- CHAMBER ROWS SHALL PROVIDE CONTINUOUS, UNOBSTRUCTED INTERNAL SPACE WITH NO INTERNAL SUPPORTS THAT WOULD IMPEDE FLOW OR LIMIT ACCESS FOR INSPECTION.
- THE STRUCTURAL DESIGN OF THE CHAMBERS, THE STRUCTURAL BACKFILL, AND THE INSTALLATION REQUIREMENTS SHALL ENSURE THAT THE LOAD FACTORS SPECIFIED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SECTION 12.12, ARE MET FOR: 1) LONG-DURATION DEAD LOADS AND 2) SHORT-DURATION LIVE LOADS, BASED ON THE AASHTO DESIGN TRUCK WITH CONSIDERATION FOR IMPACT AND MULTIPLE VEHICLE PRESENCES.
- CHAMBERS SHALL BE DESIGNED, TESTED AND ALLOWABLE LOAD CONFIGURATIONS DETERMINED IN ACCORDANCE WITH ASTM F787, "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS". LOAD CONFIGURATIONS SHALL INCLUDE: 1) INSTANTANEOUS (1 MIN) AASHTO DESIGN TRUCK LIVE LOAD ON MINIMUM COVER 2) MAXIMUM PERMANENT (75-YR) COVER LOAD AND 3) ALLOWABLE COVER WITH PARKED (1-WEEK) AASHTO DESIGN TRUCK.
- REQUIREMENTS FOR HANDLING AND INSTALLATION:
  - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
  - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 2".
  - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT AS DEFINED IN SECTION 6.2.8 OF ASTM F2922 SHALL BE GREATER THAN OR EQUAL TO 400 LBS/IN. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.
- ONLY CHAMBERS THAT ARE APPROVED BY THE SITE DESIGN ENGINEER WILL BE ALLOWED. UPON REQUEST BY THE SITE DESIGN ENGINEER OR OWNER, THE CHAMBER MANUFACTURER SHALL SUBMIT A STRUCTURAL EVALUATION FOR APPROVAL BEFORE DELIVERING CHAMBERS TO THE PROJECT SITE AS FOLLOWS:
  - THE STRUCTURAL EVALUATION SHALL BE SEALED BY A REGISTERED PROFESSIONAL ENGINEER.
  - THE STRUCTURAL EVALUATION SHALL DEMONSTRATE THAT THE SAFETY FACTORS ARE GREATER THAN OR EQUAL TO 1.36 FOR DEAD LOAD AND 1.75 FOR LIVE LOAD, THE MINIMUM REQUIRED BY ASTM F787 AND BY SECTIONS 3 AND 12.12 OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS FOR THERMOPLASTIC PIPE.
  - THE TEST DERIVED CREEP MODULUS AS SPECIFIED IN ASTM F922 SHALL BE USED FOR PERMANENT DEAD LOAD DESIGN EXCEPT THAT IT SHALL BE THE 75-YEAR MODULUS USED FOR DESIGN.
- CHAMBERS AND END CAPS SHALL BE PRODUCED AT AN ISO 9001 CERTIFIED MANUFACTURING FACILITY.

### IMPORTANT - NOTES FOR THE BIDDING AND INSTALLATION OF THE SC-310 SYSTEM

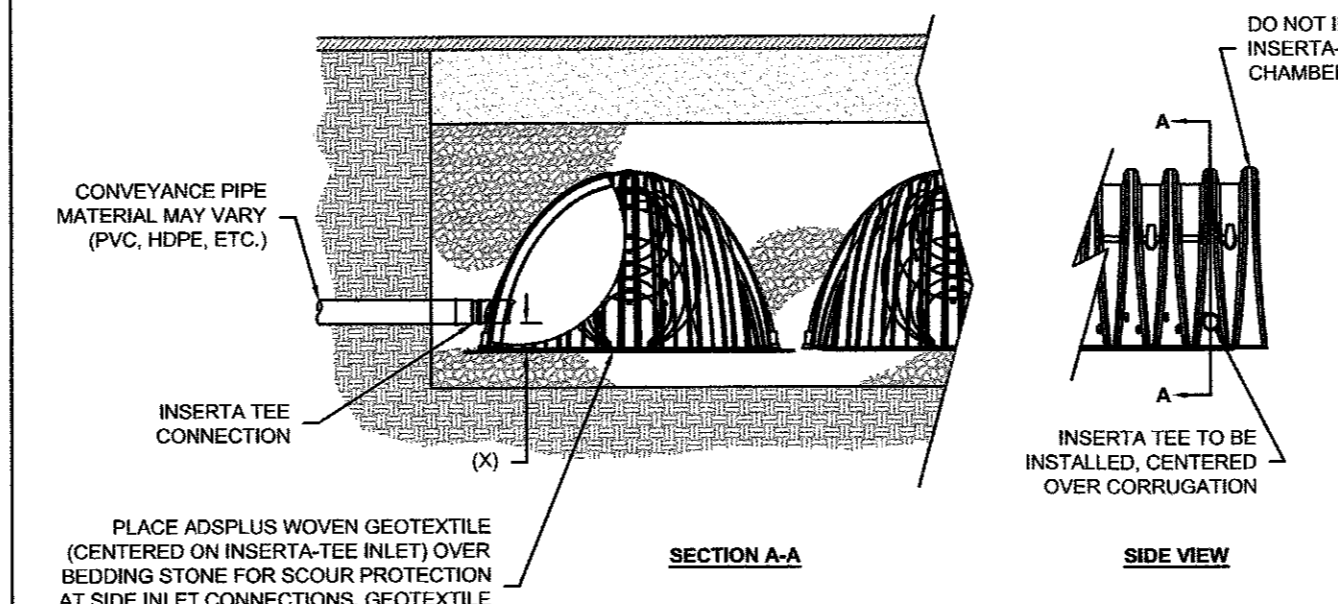
- STORMTECH SC-310 CHAMBERS SHALL NOT BE INSTALLED UNTIL THE MANUFACTURER'S REPRESENTATIVE HAS COMPLETED A PRE-CONSTRUCTION MEETING WITH THE INSTALLERS.
- STORMTECH SC-310 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
- CHAMBERS ARE NOT TO BE BACKFILLED WITH A DOZER OR AN EXCAVATOR SITUATED OVER THE CHAMBERS. STORMTECH RECOMMENDS 3 BACKFILL METHODS:
  - STONESHOTTER LOCATED OFF THE CHAMBER BED.
  - BACKFILL AS ROWS ARE BUILT USING AN EXCAVATOR ON THE FOUNDATION STONE OR SUBGRADE.
  - BACKFILL FROM OUTSIDE THE EXCAVATION USING A LONG BOOM HOE OR EXCAVATOR.
- THE FOUNDATION STONE SHALL BE LEVELLED AND COMPACTED PRIOR TO PLACING CHAMBERS.
- JOINTS BETWEEN CHAMBERS SHALL BE PROPERLY SEATED PRIOR TO PLACING CHAMBERS.
- MAINTAIN MINIMUM - 6" (150 mm) SPACING BETWEEN THE CHAMBER ROWS.
- EMBEDMENT STONE SURROUNDING CHAMBERS MUST BE A CLEAN, CRUSHED, ANGULAR STONE 3/4" (20-50 mm).
- THE CONTRACTOR MUST REPORT ANY DISCREPANCIES WITH CHAMBER FOUNDATION MATERIALS BEARING CAPACITIES TO THE SITE DESIGN ENGINEER.
- ADS RECOMMENDS THE USE OF "FLEXSTORM CATCH IT" INSERTS DURING CONSTRUCTION FOR ALL INLETS TO PROTECT THE SUBSURFACE STORMWATER MANAGEMENT SYSTEM FROM CONSTRUCTION SITE RUNOFF.

### NOTES FOR CONSTRUCTION EQUIPMENT

- STORMTECH SC-310 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
  - THE USE OF CONSTRUCTION EQUIPMENT OVER SC-310 & SC-740 CHAMBERS IS LIMITED:
    - NO EQUIPMENT IS ALLOWED ON BARE CHAMBERS.
    - NO RUBBER Tired LOADERS, DUMP TRUCKS, OR EXCAVATORS ARE ALLOWED UNTIL PROPER FILL DEPTHS ARE REACHED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
    - WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT CAN BE FOUND IN THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
  - FULL 36" (900 mm) OF STABILIZED COVER MATERIALS OVER THE CHAMBERS IS REQUIRED FOR DUMP TRUCK TRAVEL OR DUMPING.
- USE OF A DOZER TO PUSH EMBEDMENT STONE BETWEEN THE ROWS OF CHAMBERS MAY CAUSE DAMAGE TO THE CHAMBERS AND IS NOT AN ACCEPTABLE BACKFILL METHOD. ANY CHAMBERS DAMAGED BY THE "DUMP AND PUSH" METHOD ARE NOT COVERED UNDER THE STORMTECH STANDARD WARRANTY.
- CONTACT STORMTECH AT 1-888-892-2694 WITH ANY QUESTIONS ON INSTALLATION REQUIREMENTS OR WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT.



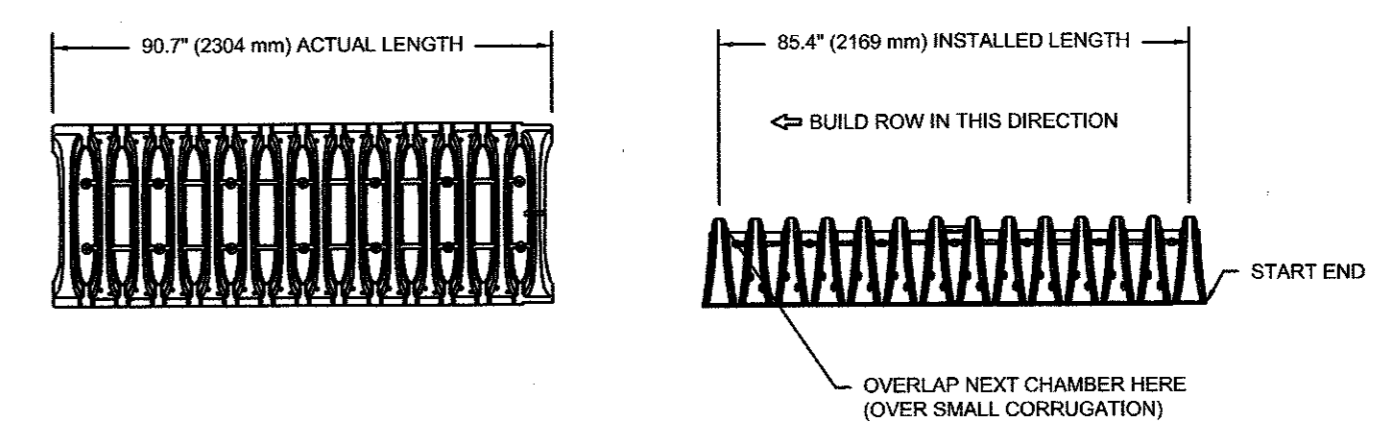
### 5 UNDERDRAIN DETAIL



| CHAMBER | MAX DIAMETER OF INSERTA TEE | HEIGHT FROM BASE OF CHAMBER (X) |
|---------|-----------------------------|---------------------------------|
| SC-310  | 6" (150 mm)                 | 4" (100 mm)                     |
| SC-740  | 10" (250 mm)                | 4" (100 mm)                     |
| DC-780  | 10" (250 mm)                | 4" (100 mm)                     |
| MC-3500 | 12" (300 mm)                | 6" (150 mm)                     |
| MC-4500 | 12" (300 mm)                | 6" (150 mm)                     |

NOTE: PART NUMBERS WILL VARY BASED ON INLET PIPE MATERIALS. CONTACT STORMTECH FOR MORE INFORMATION.

### 6 INSERTA-TEE SIDE INLET DETAIL



| NOMINAL CHAMBER SPECIFICATIONS  | 34.0" X 16.0" X 85.4"     | (864 mm X 406 mm X 2169 mm) |
|---------------------------------|---------------------------|-----------------------------|
| SIZE (W X H X INSTALLED LENGTH) | 14.7 CUBIC FEET (0.42 m³) |                             |
| CHAMBER STORAGE                 | 31.0 CUBIC FEET (0.88 m³) |                             |
| MINIMUM INSTALLED STORAGE*      | 35.0 lbs. (16.8 kg)       |                             |
| WEIGHT                          |                           |                             |

\*ASSUMES 6" (152 mm) ABOVE, BELOW, AND BETWEEN CHAMBERS

| PART #                      | STUB         | A              | B             | C            |
|-----------------------------|--------------|----------------|---------------|--------------|
| SC310EPED1 / SC310EPE06TFC  | 6" (150 mm)  | 9.6" (244 mm)  | 5.8" (147 mm) | —            |
| SC310EPE0B / SC310EPE08TFC  | 8" (200 mm)  | 11.9" (302 mm) | 3.5" (89 mm)  | 0.5" (13 mm) |
| SC310EPE08 / SC310EPE08TFC  | 8" (200 mm)  | 11.9" (302 mm) | 3.5" (89 mm)  | 0.8" (19 mm) |
| SC310EPE10 / SC310EPE10TFC  | 10" (250 mm) | 12.7" (323 mm) | 1.4" (36 mm)  | —            |
| SC310EPE10B / SC310EPE10BFC | 10" (250 mm) | 12.7" (323 mm) | —             | 0.7" (18 mm) |
| SC310EPE12B                 | 12" (300 mm) | 13.5" (343 mm) | —             | 0.9" (23 mm) |
| SC310EPE12BR                | 12" (300 mm) | 13.5" (343 mm) | —             | 0.9" (23 mm) |

ALL STUBS, EXCEPT FOR THE SC310EPE12B ARE PLACED AT BOTTOM OF END CAP SUCH THAT THE OUTSIDE DIAMETER OF THE STUB IS FLUSH WITH THE BOTTOM OF THE END CAP. FOR ADDITIONAL INFORMATION CONTACT STORMTECH AT 1-888-892-2694.

\* FOR THE SC310EPE12B THE 12" (300 mm) STUB LIES BELOW THE BOTTOM OF THE END CAP APPROXIMATELY 0.25" (6 mm). BACKFILL MATERIAL SHOULD BE REMOVED FROM BELOW THE N-12 STUB SO THAT THE FITTING SITS LEVEL.

NOTE: ALL DIMENSIONS ARE NOMINAL

### 2 SC-310 TECHNICAL SPECIFICATIONS

SC-310 STANDARD DETAILS

DATE: PROJECT NO: NOT TO SCALE

DRAWN: REVIEWED: REV:

Prepared For:  
25 HAVEN STREET, LLC  
25 HAVEN STREET  
READING, MASSACHUSETTS  
REGISTRY BOOK 1557/74  
ASSESSORS MAP 16 LOT 309

Prepared By:  
Hayes Engineering, Inc.  
603 Salem Street  
Worcester, MA 01890  
Phone: 781.246.2800  
Fax: 781.246.7596  
www.hayeseng.com

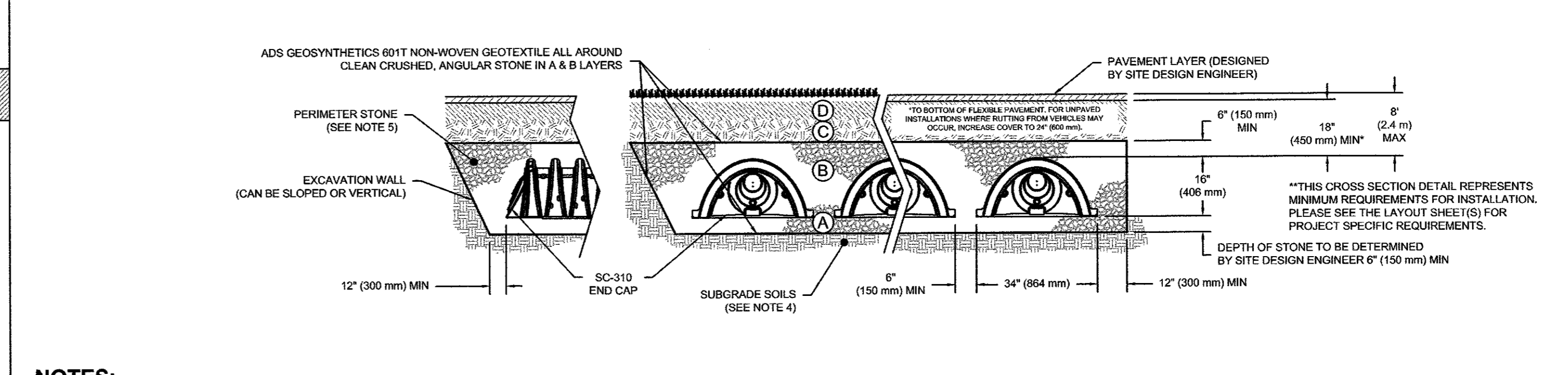
Design By:  
Drawn By:  
Checked By:  
Project File: REA-0419  
Comp. No: REA175  
 Issued For Permit  
 Issued For Review  
 Issued For Bid  
 Issued For Construction  
 Not For Construction

| No. | Revision | Date |
|-----|----------|------|
| 10  |          |      |
| 9   |          |      |
| 8   |          |      |
| 7   |          |      |
| 6   |          |      |
| 5   |          |      |
| 4   |          |      |
| 3   |          |      |
| 2   |          |      |
| 1   |          |      |

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

| MATERIAL LOCATION | DESCRIPTION   | AASHTO MATERIAL CLASSIFICATIONS   | COMPACTION / DENSITY REQUIREMENT   |
|-------------------|---|---|--|
| D                 | FINAL FILL: FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER. | N/A   | PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.  |
| C                 | INITIAL FILL: FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 18" (450 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER. | AASHTO M145<br>A-1, A-2-4, A-3<br>OR<br>AASHTO M43<br>3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 88, 9, 10 | BEGIN COMPACTIONS AFTER 12" (300 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 6" (150 mm) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS. ROLLER CROSS VEHICLE WEIGHT NOT TO EXCEED 12,000 lbs (53 kN). DYNAMIC FORCE NOT TO EXCEED 20,000 lbs (89 kN). |
| B                 | EMBEDMENT STONE: FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.  | AASHTO M43<br>3, 357, 4, 467, 5, 56, 57   | NO COMPACTION REQUIRED.  |
| A                 | FOUNDATION STONE: FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.   | AASHTO M43<br>3, 357, 4, 467, 5, 56, 57   | PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE. <sup>2,3</sup>  |

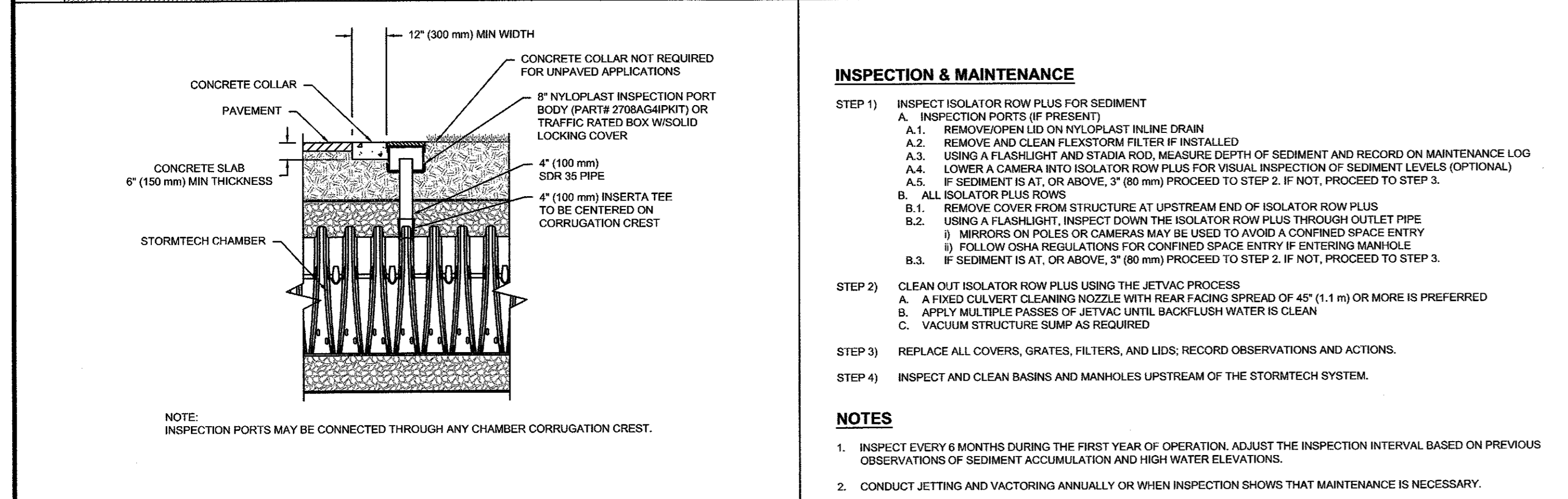
- PLEASE NOTE:
- THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
  - STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 6" (150 mm) (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
  - WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.
  - ONCE LAYER 'C' IS REACHED, ANY SOIL MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.



- NOTES:
- CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2922 (POLETHYLENE) OR ASTM F2418-16a (POLYPROPYLENE), "STANDARD SPECIFICATION FOR CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
  - SC-310 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
  - THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
  - PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
  - REQUIREMENTS FOR HANDLING AND INSTALLATION:
    - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
    - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 2".
    - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT AS DEFINED IN SECTION 6.2.8 OF ASTM F2922 SHALL BE GREATER THAN OR EQUAL TO 400 LBS/IN. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.

### 1 SC-310 CROSS SECTION DETAIL

### 3 SC-310 ISOLATOR ROW PLUS DETAIL



### 4 4" PVC INSPECTION PORT DETAIL (SC SERIES CHAMBER)

NOTE: INSPECTION PORTS MAY BE CONNECTED THROUGH ANY CHAMBER CORRUGATION CREST.

- ### INSPECTION & MAINTENANCE
- STEP 1) INSPECT ISOLATOR ROW PLUS FOR SEDIMENT
- INSPECTION PORTS (IF PRESENT)
  - REMOVE/OPEN LID ON NYLOPLAST INLINE DRAIN
  - REMOVE AND CLEAN FLEXSTORM FILTER IF INSTALLED
  - USING A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG
  - LOWER A CAMERA INTO ISOLATOR ROW PLUS FOR VISUAL INSPECTION OF SEDIMENT LEVELS (OPTIONAL)
  - IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
- B. ALL ISOLATOR PLUS ROWS
- REMOVE COVER FROM STRUCTURE AT UPSTREAM END OF ISOLATOR ROW PLUS
  - USING A FLASHLIGHT, INSPECT DOWN THE ISOLATOR ROW PLUS THROUGH OUTLET PIPE
    - MIRRORS ON POLES OR CAMERAS MAY BE USED TO AVOID A CONFINED SPACE ENTRY
    - FOLLOW OSHA REGULATIONS FOR CONFINED SPACE ENTRY IF ENTERING MAIN HOLE
  - IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
- STEP 2) CLEAN OUT ISOLATOR ROW PLUS USING THE JETVAC PROCESS
- A FIXED CULVERT CLEANING NOZZLE WITH REAR FACING SPREAD OF 45° (1.1 m) OR MORE IS PREFERRED
  - APPLY MULTIPLE PASSES OF JETVAC UNTIL BACKFLUSH WATER IS CLEAN
  - VACUUM STRUCTURE SUMP AS REQUIRED
- STEP 3) REPLACE ALL COVERS, GRATES, FILTERS, AND LIDS; RECORD OBSERVATIONS AND ACTIONS.
- STEP 4) INSPECT AND CLEAN BASINS AND MANHOLES UPSTREAM OF THE STORMTECH SYSTEM.
- ### NOTES
- INSPECT EVERY 6 MONTHS DURING THE FIRST YEAR OF OPERATION. ADJUST THE INSPECTION INTERVAL BASED ON PREVIOUS OBSERVATIONS OF SEDIMENT ACCUMULATION AND HIGH WATER ELEVATIONS.
  - CONDUCT JETTING AND VACTORING ANNUALLY OR WHEN INSPECTION SHOWS THAT MAINTENANCE IS NECESSARY.



4640 TRUEMAN BLVD  
HILLIARD, OH 43026

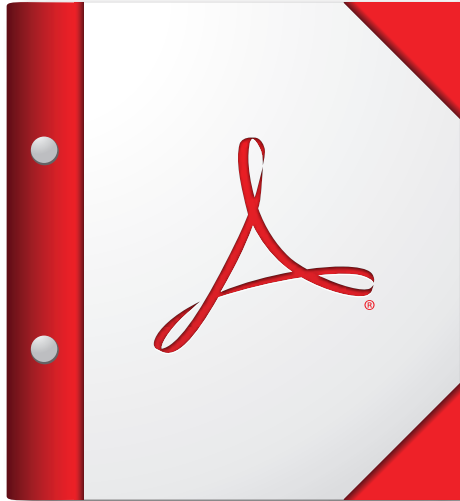
SHEET

Scale: NOT TO SCALE  
DATE: NOVEMBER 22, 2022

Drawing Title:  
DETAIL SHEET  
25 HAVEN STREET  
MIXED-USE DEVELOPMENT  
READING, MASS.

Drawing No.:  
C8  
SHEET 8 OF 8





**For the best experience, open this PDF portfolio in  
Acrobat X or Adobe Reader X, or later.**

[Get Adobe Reader Now!](#)



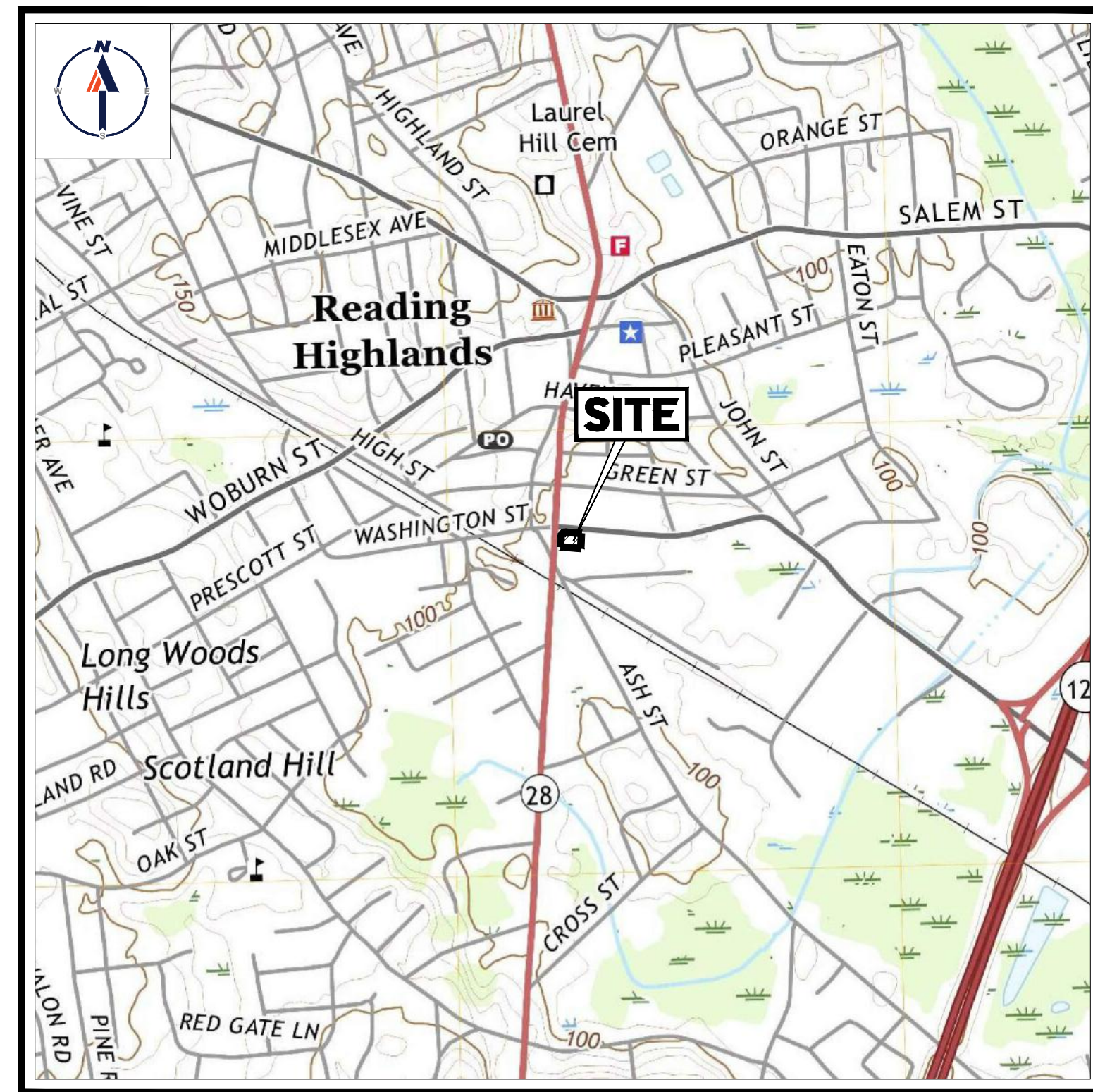
# PROPOSED SITE PLAN DOCUMENTS

FOR



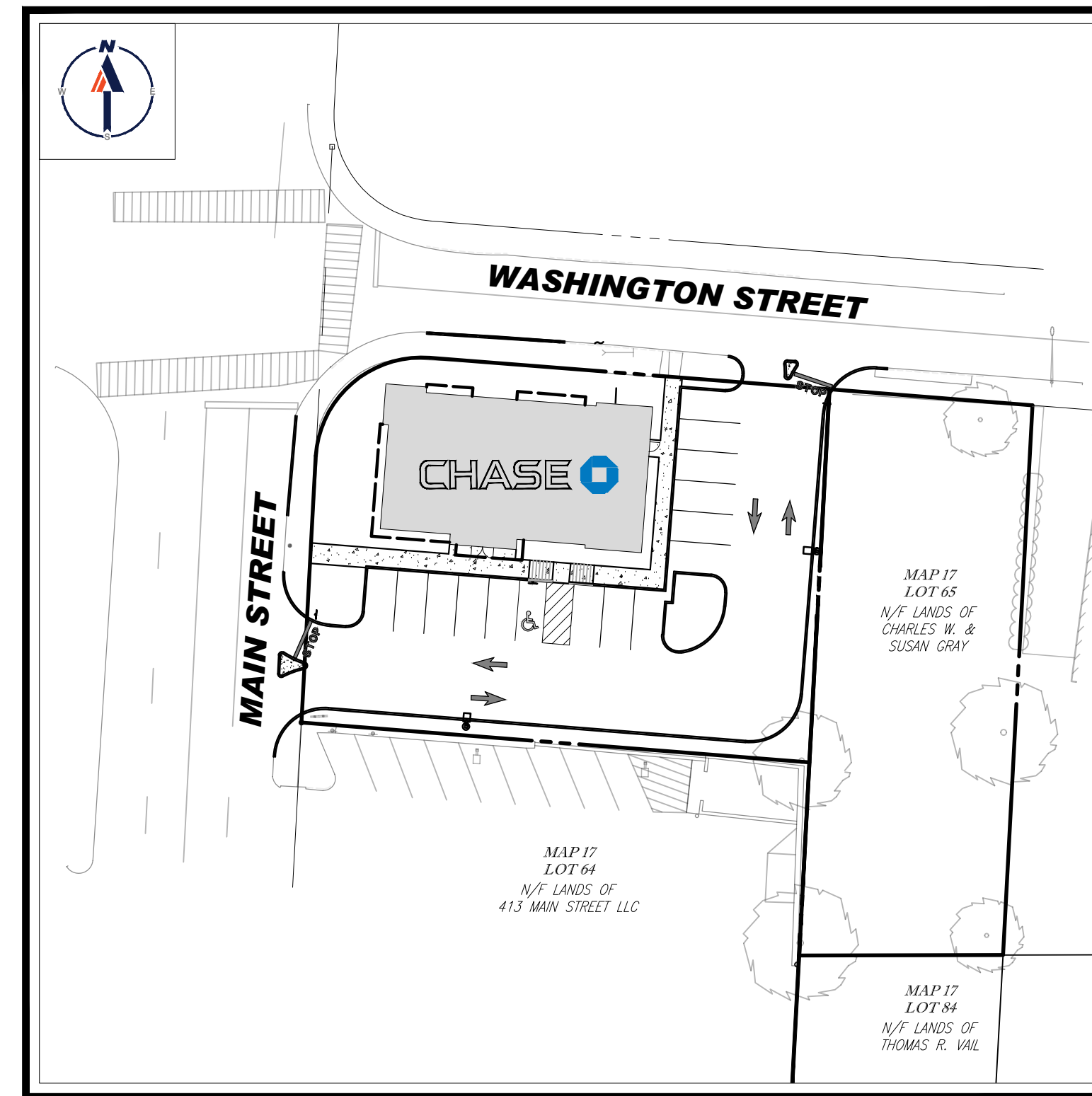
## PROPOSED BANK DEVELOPMENT

LOCATION OF SITE:  
 431 MAIN STREET, TOWN OF READING  
 MIDDLESEX COUNTY, MASSACHUSETTS  
 MAP #17, LOT #63



USGS MAP

SCALE: 1" = 1,000'  
 SOURCE: READING MASSACHUSETTS USGS QUADRANGLE



SITE MAP

SCALE: 1" = 60'

### DRAWING SHEET INDEX

| SHEET INDEX  |         |
|--|---------|
| SHEET TITLE  | NUMBER  |
| COVER SHEET  | C-101   |
| GENERAL NOTES SHEET                                | C-102   |
| DEMOLITION PLAN                                    | C-201   |
| SITE LAYOUT PLAN                                   | C-301   |
| GRADING & DRAINAGE PLAN                            | C-401   |
| UTILITY PLAN                                       | C-501   |
| SOIL EROSION & SEDIMENT CONTROL PLAN               | C-601   |
| SOIL EROSION & SEDIMENT CONTROL NOTES & DETAILS    | C-602   |
| LANDSCAPE PLAN                                     | C-701   |
| LANDSCAPE NOTES & DETAILS                          | C-702   |
| LIGHTING PLAN                                      | C-703   |
| DETAIL SHEET                                       | C-901   |
| DETAIL SHEET                                       | C-902   |
| REFERENCE PLANS                                    |         |
| BOUNDARY, TOPOGRAPHIC & UTILITY SURVEY (BY OTHERS) | 1 SHEET |

BOHLER  
 SITE CIVIL AND CONSULTING ENGINEERING  
 PROGRAM MANAGEMENT  
 LANDSCAPE ARCHITECTURE  
 SUSTAINABLE DESIGN  
 PERMITTING SERVICES  
 TRANSPORTATION SERVICES

REVISIONS

| REV | DATE | COMMENT | DRAWN BY | CHECKED BY |
|-----|------|---------|----------|------------|
|     |      |         |          |            |
|     |      |         |          |            |
|     |      |         |          |            |
|     |      |         |          |            |
|     |      |         |          |            |

811  
 Know what's below.  
 Call before you dig.  
 ALWAYS CALL 811  
 It's fast. It's free. It's the law.

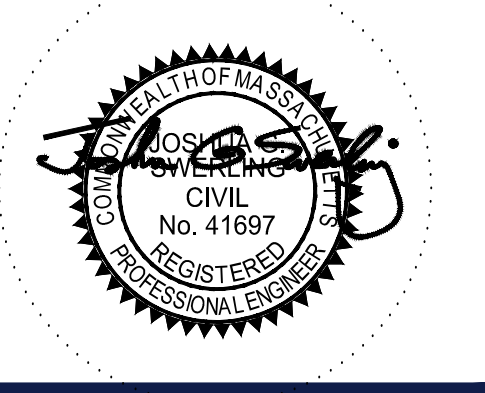
PERMIT SET

THIS DRAWING IS INTENDED FOR MUNICIPAL AND/OR AGENCY REVIEW AND APPROVAL. IT IS NOT INTENDED AS A CONSTRUCTION DOCUMENT UNLESS INDICATED OTHERWISE.

PROJECT No.: MAA220275.00  
 DRAWN BY: CFD/JRJ  
 CHECKED BY: JFR/RMM  
 DATE: 02/03/2023  
 CAD ID: MAA220275.00-SPPD-0A

PROPOSED SITE PLAN DOCUMENTS  
 FOR  
  
 PROPOSED BANK DEVELOPMENT  
 MAP: 17 LOT: 63  
 431 MAIN STREET,  
 TOWN OF READING,  
 MIDDLESEX COUNTY,  
 MASSACHUSETTS

**BOHLER**  
 352 TURNPIKE ROAD  
 SOUTHBOROUGH, MA 01772  
 Phone: (508) 480-9900  
[www.BohlerEngineering.com](http://www.BohlerEngineering.com)



SHEET TITLE:  
**COVER SHEET**

SHEET NUMBER:  
**C-101**

ORG. DATE - 02/03/2023

PREPARED BY

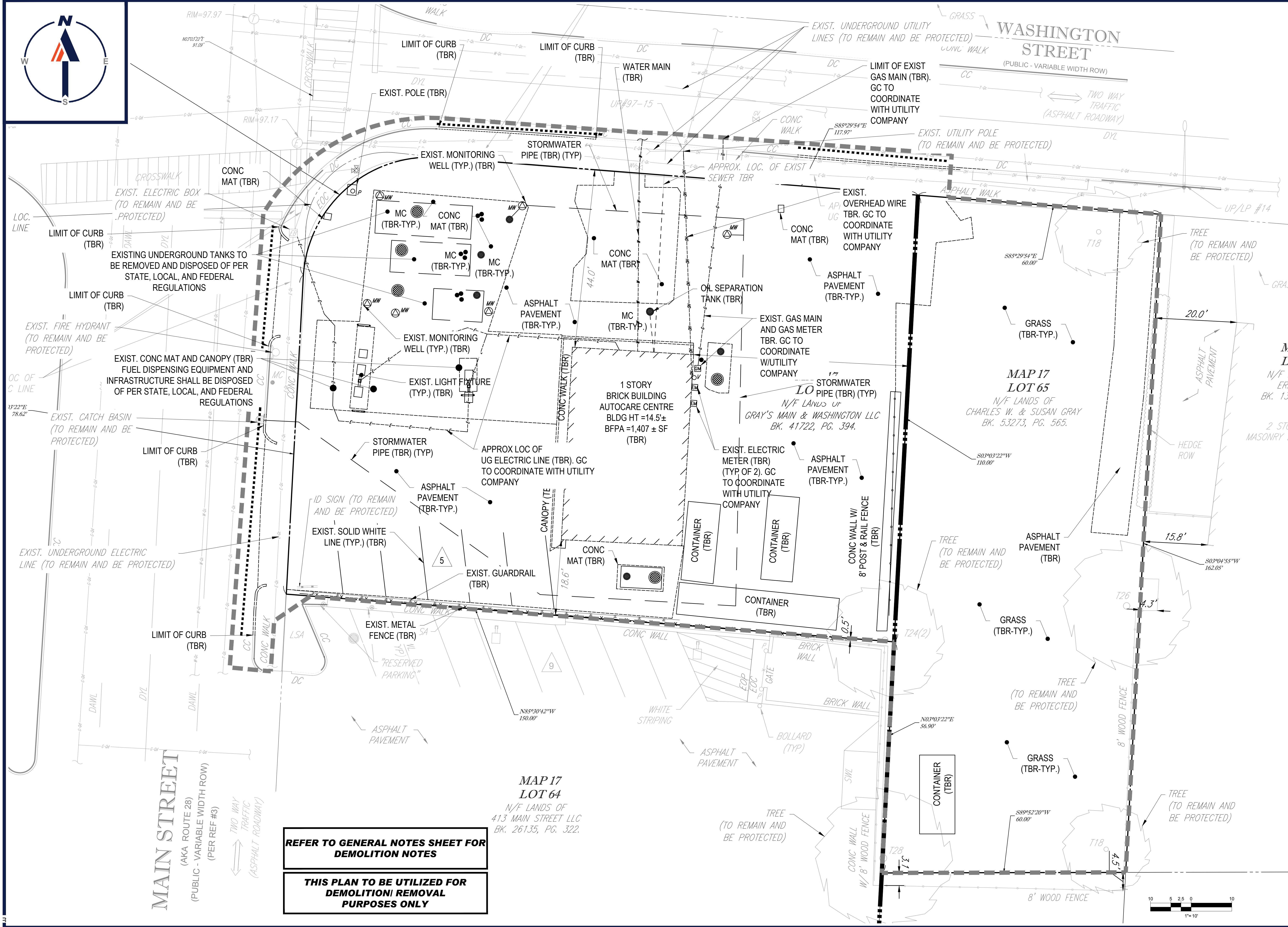


I:\BOHLER\NET\SHARES\BMA\PROJECTS\2022\MAA220275.00\CAD\DRAWINGS\PLAN SETS\CIVIL SITE PLAN\BMAA220275.00-SPPD-0A-1-1\LAYOUT\C-101-COVER









**REFER TO GENERAL NOTES SHEET FOR DEMOLITION NOTES**

**THIS PLAN TO BE UTILIZED FOR DEMOLITION/ REMOVAL PURPOSES ONLY**

**MAP 17 LOT 64**  
 N/F LANDS OF  
 413 MAIN STREET LLC  
 BK. 26135, PG. 322.

**MAP 17 LOT 65**  
 N/F LANDS OF  
 CHARLES W. & SUSAN GRAY  
 BK. 53273, PG. 565.

1 STORY  
 BRICK BUILDING  
 AUTOCARE CENTRE  
 BLDG HT =14.5'±  
 BFPA =1,407 ± SF  
 (TBR)

**BOHLER**  
 SITE CIVIL AND CONSULTING ENGINEERING  
 PROGRAM MANAGEMENT  
 LANDSCAPE ARCHITECTURE  
 SUSTAINABLE DESIGN  
 PERMITTING SERVICES  
 TRANSPORTATION SERVICES

**REVISIONS**

| REV | DATE | COMMENT | DRAWN BY |
|-----|------|---------|----------|
|     |      |         |          |
|     |      |         |          |
|     |      |         |          |
|     |      |         |          |

**811**  
 Know what's below.  
 Call before you dig.  
 ALWAYS CALL 811  
 It's fast. It's free. It's the law.

**PERMIT SET**

THIS DRAWING IS INTENDED FOR MUNICIPAL AND/OR AGENCY REVIEW AND APPROVAL. IT IS NOT INTENDED AS A CONSTRUCTION DOCUMENT UNLESS INDICATED OTHERWISE.

PROJECT No.: MAA220275.00  
 DRAWN BY: CFJ/RJM  
 CHECKED BY: JF/RMM  
 DATE: 02/03/2023  
 CAD ID: MAA220275.00-SPPD-0A

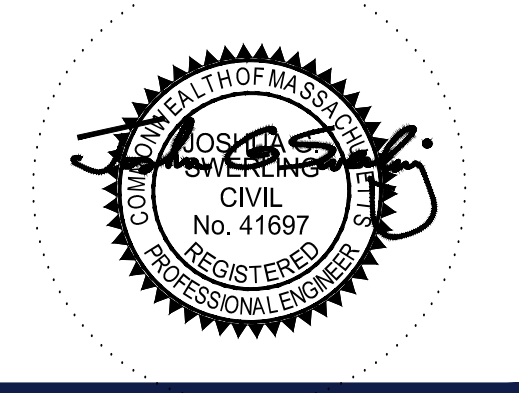
**PROPOSED SITE PLAN DOCUMENTS**

FOR

**CHASE**

PROPOSED BANK DEVELOPMENT  
 MAP: 17 LOT: 63  
 431 MAIN STREET,  
 TOWN OF READING,  
 MIDDLESEX COUNTY,  
 MASSACHUSETTS

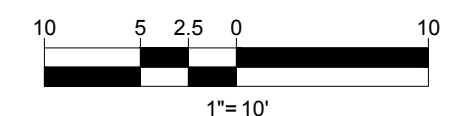
**BOHLER**  
 352 TURNPIKE ROAD  
 SOUTHBOROUGH, MA 01772  
 Phone: (508) 480-9900  
 www.BohlerEngineering.com



SHEET TITLE:  
**DEMOLITION PLAN**

SHEET NUMBER:  
**C-201**

ORG. DATE - 02/03/2023



I:\BOHLER\NET\SHARES\BMA\PROJECTS\2023\2023-02-03\DRAWINGS\PLAN SETS\64\DRAWING\PLAN SETS\64\MAP 17 LOT 64 - LAYOUT C-201.DWG

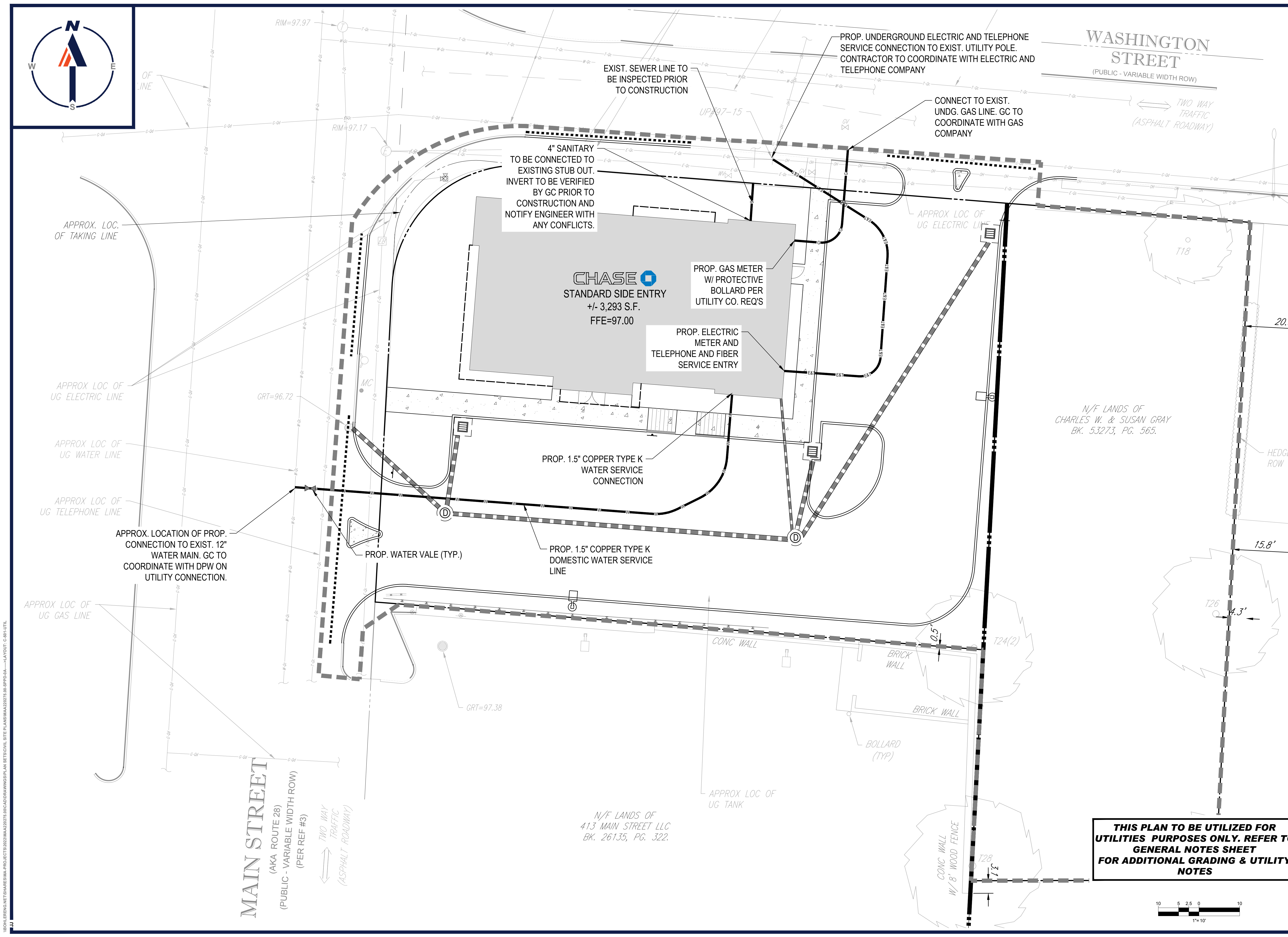












**BOHLER**  
 SITE CIVIL AND CONSULTING ENGINEERING  
 PROGRAM MANAGEMENT  
 LANDSCAPE ARCHITECTURE  
 SUSTAINABLE DESIGN  
 PERMITTING SERVICES  
 TRANSPORTATION SERVICES

**REVISIONS**

| REV | DATE | COMMENT | DRAWN BY | CHECKED BY |
|-----|------|---------|----------|------------|
|     |      |         |          |            |
|     |      |         |          |            |
|     |      |         |          |            |
|     |      |         |          |            |

**811**  
 Know what's below.  
 Call before you dig.  
 ALWAYS CALL 811  
 It's fast. It's free. It's the law.

**PERMIT SET**

THIS DRAWING IS INTENDED FOR MUNICIPAL AND/OR AGENCY REVIEW AND APPROVAL. IT IS NOT INTENDED AS A CONSTRUCTION DOCUMENT UNLESS INDICATED OTHERWISE.

PROJECT No.: MAA220275.00  
 DRAWN BY: CFD/JRJ  
 CHECKED BY: JFR/MM  
 DATE: 02/03/2023  
 CAD ID: MAA220275.00-SPPD-0A

**PROPOSED SITE PLAN DOCUMENTS**

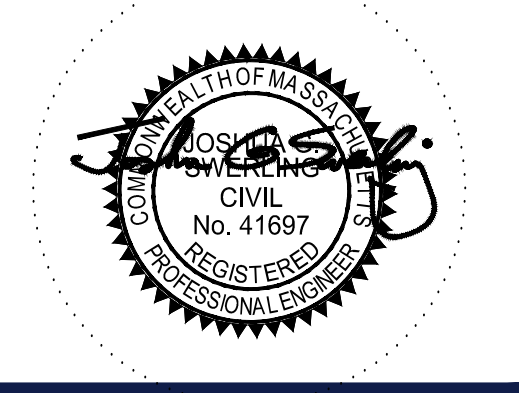
FOR

**CHASE**

PROPOSED BANK DEVELOPMENT  
 MAP: 17 LOT: 63  
 431 MAIN STREET,  
 TOWN OF READING,  
 MIDDLESEX COUNTY,  
 MASSACHUSETTS

**BOHLER**

352 TURNPIKE ROAD  
 SOUTHBOROUGH, MA 01772  
 Phone: (508) 480-9900  
[www.BohlerEngineering.com](http://www.BohlerEngineering.com)

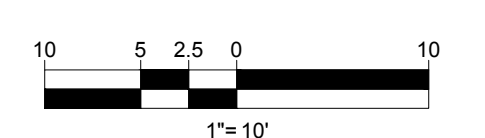


SHEET TITLE:  
**UTILITY PLAN**

SHEET NUMBER:  
**C-501**

ORG. DATE - 02/03/2023

**THIS PLAN TO BE UTILIZED FOR UTILITIES PURPOSES ONLY. REFER TO GENERAL NOTES SHEET FOR ADDITIONAL GRADING & UTILITY NOTES**



I:\BOHLER\NET\SHARES\BMA\PROJECTS\2022\MAA220275.00\CAD\DRAWINGS\PLAN SETS\17\MAA220275.00-SPPD-0A-1-1\LAYOUT\C-01-UTL





WASHINGTON STREET  
(PUBLIC - VARIABLE WIDTH ROW)

TWO WAY TRAFFIC  
(ALT ROADWAY)

PROP. STABILIZED CONSTRUCTION  
ENTRANCE/EXIT. ALL VEHICLES TO UTILIZE  
PRIOR TO LEAVING SITE

PROP. SILTATION  
BARRIER (TYP.)

**CHASE**  
STANDARD SIDE ENTRY  
+/- 3,293 S.F.  
FFE=97.00

PROP. INLET  
PROTECTION  
(TYP.)

PROP. INLET  
PROTECTION  
(TYP.)

PROP. INLET  
PROTECTION  
(TYP.)

PROP. TEMPORARY SOIL  
STOCKPILE AREA SURROUNDED  
BY STRAW BALES & SILT FENCE

N/F LANDS OF  
CHARLES W. & SUSAN GRAY  
BK. 53273, PG. 565.

HEDGE  
ROW

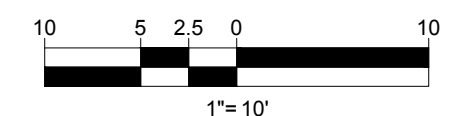
N/F LANDS OF  
413 MAIN STREET LLC  
BK. 26135, PG. 322.

**MAIN STREET**  
(AKA ROUTE 28)  
(PUBLIC - VARIABLE WIDTH ROW)  
(PER REF #3)

TWO WAY  
TRAFFIC  
(ASPHALT ROADWAY)

**THIS PLAN TO BE UTILIZED FOR SITE  
SOIL AND EROSION CONTROL  
PURPOSES ONLY**

**REFER TO SOIL EROSION CONTROL  
NOTES & DETAIL SHEET FOR EROSION  
NOTES AND DETAILS**



**BOHLER**  
SITE CIVIL AND CONSULTING ENGINEERING  
PROGRAM MANAGEMENT  
LANDSCAPE ARCHITECTURE  
SUSTAINABLE DESIGN  
PERMITTING SERVICES  
TRANSPORTATION SERVICES

**REVISIONS**

| REV | DATE | COMMENT | DRAWN BY |
|-----|------|---------|----------|
|     |      |         |          |
|     |      |         |          |
|     |      |         |          |
|     |      |         |          |
|     |      |         |          |
|     |      |         |          |
|     |      |         |          |
|     |      |         |          |
|     |      |         |          |
|     |      |         |          |

**811**  
Know what's below.  
Call before you dig.  
ALWAYS CALL 811  
It's fast. It's free. It's the law.

**PERMIT SET**

THIS DRAWING IS INTENDED FOR MUNICIPAL AND/OR AGENCY REVIEW AND APPROVAL. IT IS NOT INTENDED AS A CONSTRUCTION DOCUMENT UNLESS INDICATED OTHERWISE.

PROJECT No.: MAA220275.00  
DRAWN BY: CFD/JRJ  
CHECKED BY: JF/RMM  
DATE: 02/03/2023  
CAD ID: MAA220275.00-SPPD-0A

**PROPOSED SITE  
PLAN DOCUMENTS**

FOR

**CHASE**

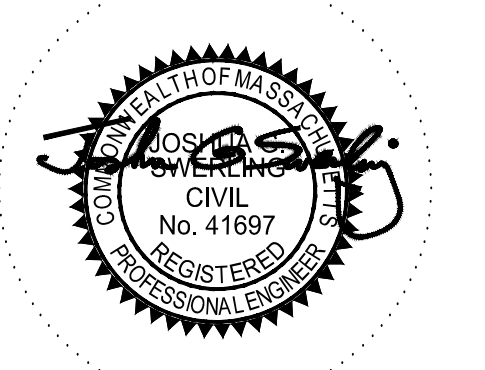
PROPOSED  
BANK DEVELOPMENT

MAP: 17 LOT: 63  
431 MAIN STREET,  
TOWN OF READING,  
MIDDLESEX COUNTY,  
MASSACHUSETTS

**BOHLER**

352 TURNPIKE ROAD  
SOUTHBOROUGH, MA 01772  
Phone: (508) 480-9900

[www.BohlerEngineering.com](http://www.BohlerEngineering.com)



SHEET TITLE:  
**SOIL EROSION  
& SEDIMENT  
CONTROL PLAN**

SHEET NUMBER:  
**C-601**

ORG. DATE - 02/03/2023

\\BOHLER\ENGIN\TISHARE\BMA\PROJECTS\2022\MAA220275.00\CAD\DRAWINGS\PLAN SETS\CIVIL SITE PLAN\BMAA220275.00-SPPD-0A-1-LAYOUT1.C-601-EROS























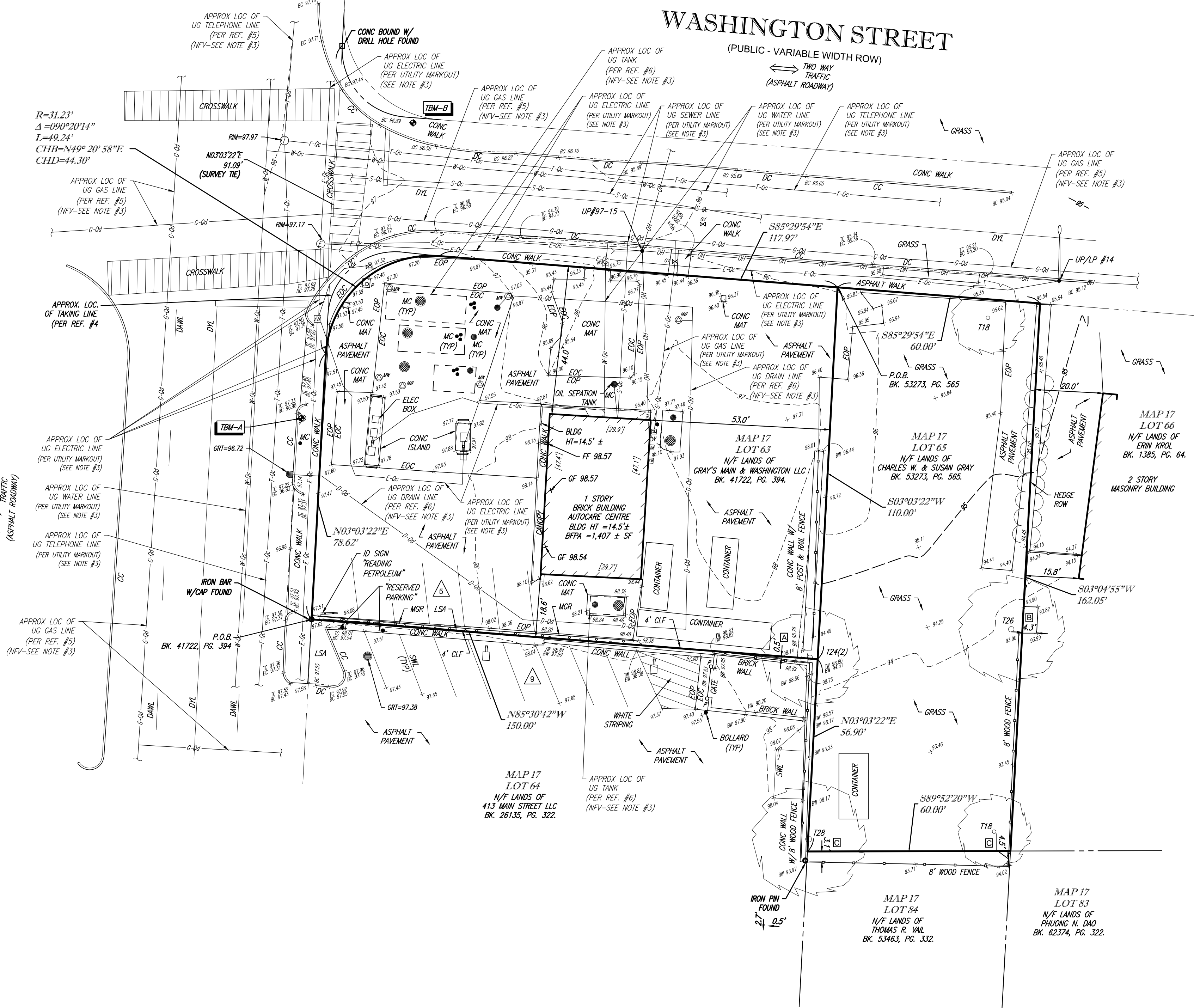




LEGEND

- 124 --- EXISTING CONTOUR
- 125 EXISTING SPOT ELEVATION
- X 121.45 EXISTING TOP OF CURB ELEVATION
- X BC 121.45 EXISTING BOTTOM OF CURB ELEVATION
- X TW 121.45 EXISTING TOP OF WALL ELEVATION
- X BW 122.85 EXISTING BOTTOM OF WALL ELEVATION
- X FF 121.45 EXISTING FINISHED FLOOR ELEVATION
- OH OVERHEAD WIRES
- G APPROX. LOC. UNDERGROUND GAS LINE
- E APPROX. LOC. UNDERGROUND ELECTRIC LINE
- D APPROX. LOC. UNDERGROUND DRAINAGE LINE
- S APPROX. LOC. UNDERGROUND SANITARY / SEWER LINE
- T APPROX. LOC. UNDERGROUND TELEPHONE LINE
- W APPROX. LOC. UNDERGROUND WATER LINE
- GV GAS VALVE
- GM GAS METER
- EM ELECTRIC METER
- HYDRANT
- UP F UTILITY POLE
- GW GUY WIRE
- SL STREET LIGHT
- TS TRAFFIC SIGNAL
- MW MONITORING WELL
- AL AREA LIGHT
- SIGN
- BOLLARD
- U-BOLLARD
- MGR METAL GUIDE RAIL
- POST
- TMH TELEPHONE MANHOLE
- EMH ELECTRIC MANHOLE
- PC PARKING SPACE COUNT
- TREE & TRUNK SIZE
- EVIDENCE FOUND
- UNKNOWN TERMINUS
- DYL DOUBLE YELLOW LINE
- HT HEIGHT
- DAML DASHED WHITE LINE
- BLDG BUILDING
- BFFA BUILDING FOOTPRINT AREA
- UC UNDER GROUND
- CLF CHAIN LINK FENCE
- DC DEPRESSED CURB
- EOP EDGE OF CONCRETE
- EOP EDGE OF PAVEMENT
- LSA LANDSCAPED AREA
- MC METAL COVER
- (TYP) TYPICAL
- GRT GRATE ELEVATION
- BOT BOTTOM ELEVATION
- LO' OFFSET OF STRUCTURE AT GROUND LEVEL RELATIVE TO PROPERTY LINE
- EL ELEVATION
- SWL SOLID WHITE LINE
- TBM TEMPORARY BENCH MARK
- CC CONCRETE CURB
- C- SUBSURFACE UTILITY QUALITY LEVEL C
- D- SUBSURFACE UTILITY QUALITY LEVEL D

**MAIN STREET**  
(AKA ROUTE 28)  
(PUBLIC - VARIABLE WIDTH ROW)  
(PER REF. #3)  
(ASPHALT ROADWAY)



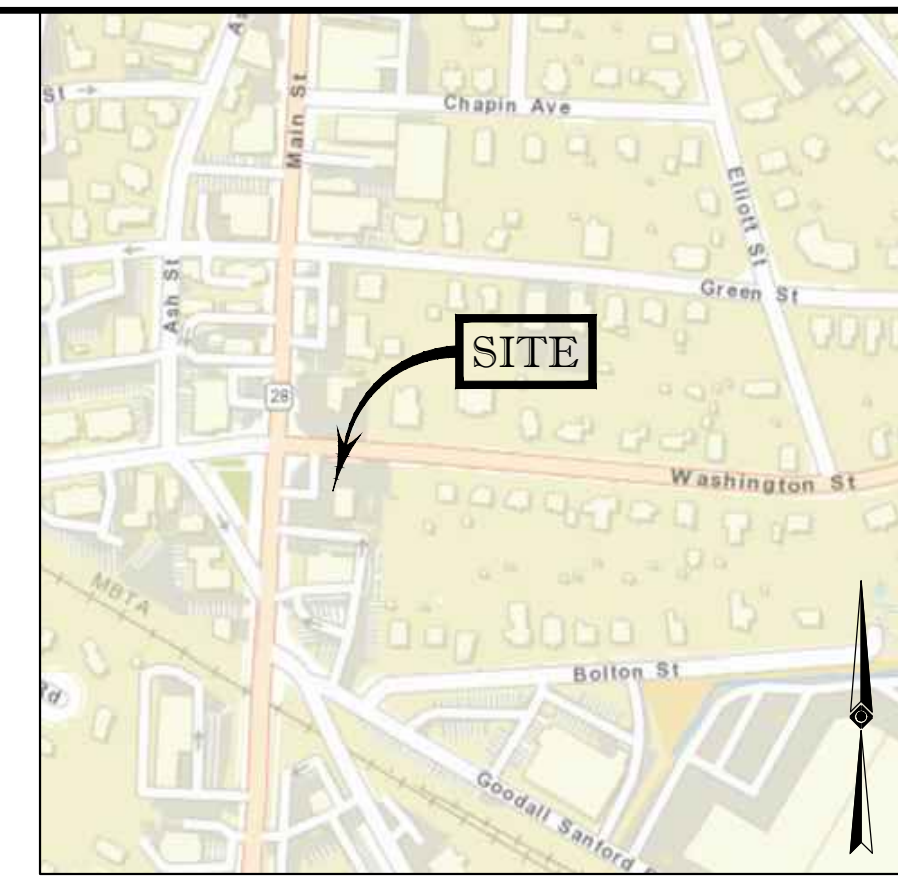
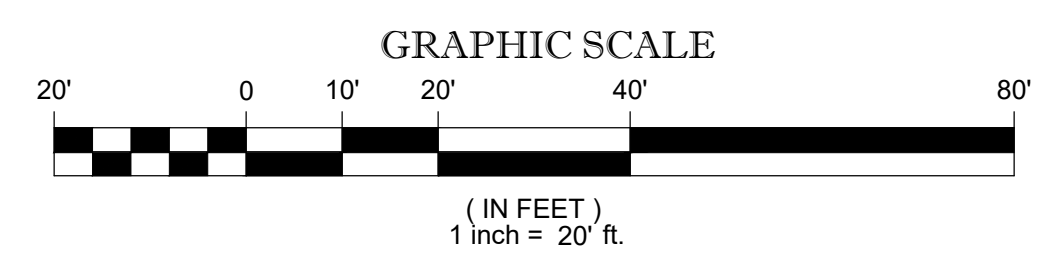
- NOTES:**
- PROPERTY KNOWN AS LOT 63 AS SHOWN ON THE TOWN OF READING, MIDDLESEX COUNTY, COMMONWEALTH OF MASSACHUSETTS, MAP NO. 17.
  - AREA: LOT 63 = 16,276 SQUARE FEET OR 0.374 ACRES  
LOT 65 = 9,860 SQUARE FEET OR 0.226 ACRES
  - LOCATION OF UNDERGROUND UTILITIES ARE APPROXIMATE. LOCATIONS AND SIZES ARE BASED ON UTILITY MARK-OUTS, ABOVE GROUND STRUCTURES THAT WERE VISIBLE & ACCESSIBLE IN THE FIELD, AND THE MAPS AS LISTED IN THE REFERENCES AVAILABLE AT THE TIME OF THE SURVEY. AVAILABLE AS-BUILT PLANS AND UTILITY MARKOUT DOES NOT ENSURE MAPPING OF ALL UNDERGROUND UTILITIES AND STRUCTURES. BEFORE ANY EXCAVATION IS TO BEGIN, ALL UNDERGROUND UTILITIES SHOULD BE VERIFIED AS TO THEIR LOCATION, SIZE AND TYPE BY THE PROPER UTILITY COMPANIES. CONTROL POINT ASSOCIATES, INC. DOES NOT GUARANTEE THE UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA EITHER IN SERVICE OR ABANDONED.
- THE SOURCE OF UNDERGROUND UTILITIES ARE SHOWN UTILIZING A QUALITY LEVEL SYSTEM:
- QUALITY LEVEL D - UTILITIES SHOWN BASED UPON REFERENCE MAPPING OR ORAL HISTORY. NOT FIELD VERIFIED.
  - QUALITY LEVEL C - LOCATION OF UTILITY SURFACE FEATURES SUPPLEMENTS REFERENCE MAPPING. INCLUDES MARKOUT BY OTHERS.
  - QUALITY LEVEL B - UTILITY LOCATION DATA IS COLLECTED THROUGH GEOPHYSICAL SENSING TECHNOLOGY TO SUPPLEMENT SURFACE FEATURES AND OR REFERENCE MAPPING. INCLUDES MARKOUT BY CONTROL POINT ASSOCIATES, INC.
  - QUALITY LEVEL A - HORIZONTAL AND VERTICAL LOCATION OF UTILITIES ARE OBTAINED USING VACUUM EQUIPMENT EXCAVATION OR OTHER METHODS TO EXPOSE THE UTILITY. LOCATION SHOWN AT SINGLE POINT WHERE EXCAVATION OCCURRED UNLESS UTILITY WAS LOCATED PRIOR TO FILLING.
- ALL FOUR TYPES MAY NOT BE PRESENT ON THIS EXCAVATION.
- THIS PLAN IS BASED ON INFORMATION PROVIDED BY CLIENT, A SURVEY PREPARED IN THE FIELD BY CONTROL POINT ASSOCIATES, INC., AND OTHER REFERENCE MATERIAL AS LISTED HEREON.
  - THIS SURVEY WAS PREPARED WITHOUT THE BENEFIT OF A TITLE REPORT AND IS SUBJECT TO THE RESTRICTIONS, COVENANTS AND/OR EASEMENTS THAT MAY BE CONTAINED THEREIN. IT IS STRONGLY RECOMMENDED THAT A COMPLETE TITLE SEARCH BE PROVIDED TO THE SURVEYOR FOR REVIEW PRIOR TO THE PLACEMENT OF OR ALTERATION TO IMPROVEMENTS TO THE PROPERTY.
  - BY GRAPHIC PLOTTING ONLY PROPERTY IS PARTIALLY LOCATED IN FLOOD HAZARD ZONE X UNSHADED (AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN) PER REF. # 2.
  - THE EXISTENCE OF UNDERGROUND STORAGE TANKS, IF ANY, WAS NOT KNOWN AT THE TIME OF THE FIELD SURVEY.
  - ELEVATIONS REFER TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88), BASED ON GPS OBSERVATIONS UTILIZING THE KEYSTONE VRS NETWORK (KEYNETGPS).  
TEMPORARY BENCH MARKS SET:  
TBM-A: X-CUT IN BOLT OVER MAIN OUTLET OF FIRE HYDRANT. ELEVATION = 99.50'  
TBM-B: MAG NAIL SET IN CONCRETE SIDEWALK. ELEVATION = 97.41'
  - PRIOR TO CONSTRUCTION IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THAT THE BENCHMARKS ILLUSTRATED ON THIS SKETCH HAVE NOT BEEN DISTURBED AND THEIR ELEVATIONS HAVE BEEN CONFIRMED. ANY CONFLICTS MUST BE REPORTED PRIOR TO CONSTRUCTION.
  - THE OFFSETS SHOWN ARE NOT TO BE USED FOR THE CONSTRUCTION OF ANY STRUCTURE, FENCE, PERMANENT ADDITION, ETC.

- REFERENCES:**
- THE TAX ASSESSOR'S MAP OF TOWN OF READING, MIDDLESEX COUNTY, MAP 17.
  - MAP ENTITLED "NATIONAL FLOOD INSURANCE PROGRAM, FIRM, FLOOD INSURANCE RATE MAP, MASSACHUSETTS (ALL JURISDICTIONS), MIDDLESEX COUNTY, PANEL 313 OF 656," MAP NUMBER 25017C0313E, EFFECTIVE DATE, JUNE 4, 2010.
  - MAP ENTITLED "PROPOSED PLOT PLAN 431 MAIN STREET READING, MASSACHUSETTS," PREPARED BY LECLAN SURVEY ASSOCIATES, INC., DATED MAY 14, 2013.
  - MAP ENTITLED "PLAN OF LAND IN READING, MASSACHUSETTS LAND TAKING FOR ROADWAY CONSTRUCTION," PREPARED BY READING DEPARTMENT OF PUBLIC WORKS, ENGINEERING DIVISION, DATED DECEMBER 1, 1993. RECORDED IN MIDDLESEX COUNTY REGISTRY OF DEEDS AS PLAN No. 333 OF 1994.
  - GAS MAPPING PROVIDED BY NATIONAL GRID.
  - MAP ENTITLED "MOBIL OIL CORPORATION READING, MASSACHUSETTS, SITE PLAN SHOWING LAYOUT OF PROPOSED REMEDIAL SYSTEM," PREPARED BY HYDRO-ENVIRONMENTAL TECHNOLOGIES, INC., DATED OCTOBER 31, 1990.

**TABLE OF APPARENT ENCROACHMENTS**

|   |   |
|---|---|
| A | 4' CHAIN LINK FENCE FROM LOT 63 OVER PROP LINE ONTO LOT 64 BY 0.5'    |
| B | 8' WOODEN FENCE FROM LOT 65 OVER PROP LINE ONTO 66 BY 4.3'            |
| C | 8' WOODEN FENCE FROM LOT 65 OVER PROP LINE ONTO LOT 84 BY 3.1' - 4.5' |

NOTE: THESE ARE THE POSSIBLE ENCROACHMENTS OBSERVED DURING THE FIELD SURVEY. THERE MAY BE OTHERS NOT RECOGNIZED BY THE SURVEYOR.



MASSACHUSETTS STATE PLANE COORDINATE SYSTEM - (NAD 83)

CONTROL POINT ASSOCIATES, INC. - ALL RIGHTS RESERVED. ORIGINAL PRODUCT OR SERVICE PROVIDED BY CONTROL POINT ASSOCIATES, INC. IS PROHIBITED.



THE COMMONWEALTH OF MASSACHUSETTS REQUIRES NOTIFICATION BY EXCAVATORS, DESIGNERS, OR ANY PERSON PREPARING TO DISTURB THE EARTH'S SURFACE ANYWHERE IN THE COMMONWEALTH.

THIS SURVEY HAS BEEN PERFORMED IN THE FIELD UNDER MY SUPERVISION, AND TO THE BEST OF MY KNOWLEDGE, BELIEF, AND INFORMATION, THIS SURVEY HAS BEEN PERFORMED IN ACCORDANCE WITH CURRENTLY ACCEPTED ACCURACY STANDARDS.

NOT A VALID ORIGINAL DOCUMENT UNLESS EMBOSSED WITH RAISED IMPRESSION OR STAMPED WITH A BLUE INK SEAL

**GERRY L. HOLDRIGHT, PLS**  
MASSACHUSETTS PROFESSIONAL LAND SURVEYOR #49211

|                |           |   |          |              |          |
|----------------|-----------|---|----------|--------------|----------|
| FIELD DATE     | 8-16-2022 | <b>BOUNDARY, TOPOGRAPHIC &amp; UTILITY SURVEY</b> |          |              |          |
| FIELD BOOK NO. | 22-09 MA  | <b>431 MAIN STREET</b>                            |          |              |          |
| FIELD BOOK PG. | 105       | MAP 17, LOTS 63 & 65                              |          |              |          |
| FIELD CREW     | B.S.B.    | TOWN OF READING                                   |          |              |          |
| DRAWN:         | R.A.      | MIDDLESEX COUNTY                                  |          |              |          |
| REVIEWED:      | R.J.K.    | COMMONWEALTH OF MASSACHUSETTS                     |          |              |          |
| DATE           | 9-15-2022 | ALBANY, NY 518-217-5010                           | FILE NO. | 03-220325-00 | DWG. NO. |
| APPROVED:      | G.L.H.    | CHAFFONT, PA 215-712-9800                         | SCALE    | 1"=20'       | 1 OF 1   |
|                |           | HAUPPAUGE, NY 631-880-2645                        |          |              |          |
|                |           | MANHATTAN, NY 646-780-0411                        |          |              |          |
|                |           | SOUTH BOKROUGH, MA 01772                          |          |              |          |
|                |           | 508.948.5000 - 508.948.3003 FAX                   |          |              |          |
|                |           | MT LAUREL, NJ 609-657-2999                        |          |              |          |
|                |           | WARREN, NJ 908-692-2999                           |          |              |          |



TOWN OF READING MASSACHUSETTS  
COMMUNITY PLANNING AND DEVELOPMENT COMMISSION  
REQUEST FOR REDUCTION OR RELEASE OF SURETY AMOUNT  
**Form M**

To be submitted by the developer to the Commission through the Director of Community Development with a copy to the Town Engineer

The undersigned, developer of the following described subdivision, hereby requests a X Reduction in the amount of funds held as surety for the completion of this subdivision;

       Release of all remaining funds held as surety for the completion of this subdivision  
plan entitled Definitive Subdivision Plan, 1260-1264 Main Street, Reading, MA;  
dated December 7, 2016;  
as revised through June 13, 2017;  
Applicant / Owner Jacqueline Welch;  
Engineer williams & Sprages;  
recorded with Middlesex South District Registry of Deeds, Book 933, Page 2017  
approved by the Community Planning and Development Commission of said Reading on:

Type of surety:

       by Performance Bond--Secured by Deposit, dated \_\_\_\_\_  
       by Performance Bond--Surety Company, dated \_\_\_\_\_  
X by Three-Party Agreement, dated July 9, 2018  
date of latest reduction of the surety amount: \_\_\_\_\_  
amount of remaining surety funds held: 12,000.00

Description of work completed since the latest reduction:

Granite curbing material & labor, leveling and top coat on full roadway and sidewalks. All castings  
Were raised, trees planted and mulch added, stone bounds were installed, fence installed around  
detention pond. All street signs installed.

Amount Requested: \_\_\_\_\_

Developer's Signature:   
Typed Name: Jacqueline Welch

Date of request: January 10, 2023

=====

Town Engineer's recommended reduction or release amount \_\_\_\_\_  
Reduction or Release amount approved by the Commission: \_\_\_\_\_

such that the following amount will still be held for completion:

by vote of the Commission on \_\_\_\_\_  
Date

The developer may present this form, signed below, to the holder of above funds as evidence of authorized reduction or release.

Signed: \_\_\_\_\_  
Director of Community Development



Subdivision: Definitive Subdivision, Veterans Way  
 Applicant Name and Address: Jacqueline Welch, PO BOX 473, Wilmington, MA 01887  
 Phone: 978-853-2303

| <u>Item</u> |  | <u>Initial of Inspector</u> | <u>Inspection Date</u> | <u>Notes</u> |
|-------------|--|-----------------------------|------------------------|--------------|
| 1           | Construction Engineering Layout Controls | _____                       | _____                  | _____        |
| 2           | Lead Clearing & Grubbing                 | _____                       | _____                  | _____        |
| 3           | Excavation & Filling                     | _____                       | _____                  | _____        |
| 4           | Drainage System Installation             | _____                       | _____                  | _____        |
| 5           | Sewer System Installation                | _____                       | _____                  | _____        |
| 6           | Water System Installation                | _____                       | _____                  | _____        |
| 7           | Hydrants Installation                    | _____                       | _____                  | _____        |
| 8           | Sewer Tests (of all Installations)       | _____                       | _____                  | _____        |
| 9           | Water Tests (of all Installations)       | _____                       | _____                  | _____        |
| 10          | Trench Gravel, Backfill & Compaction     | _____                       | _____                  | _____        |
| 11          | Other Utilities                          | _____                       | _____                  | _____        |
| 12          | Connections to Existing Utilities        | _____                       | _____                  | _____        |
| 13          | Prepare Road Sub-Base for Paving         | _____                       | _____                  | _____        |
| 14          | Binder Paving                            | _____                       | _____                  | _____        |
| 15          | Leveling Course                          | _____                       | _____                  | _____        |
| 16          | Curbing / Berm Installation              | _____                       | _____                  | _____        |
| 17          | Finish Pavement                          | _____                       | _____                  | _____        |
| 18          | Sidewalks                                | _____                       | _____                  | _____        |
| 19          | Tree Lawns                               | _____                       | _____                  | _____        |
| 20          | Installation of Monuments                | _____                       | _____                  | _____        |
| 21          | Street Signs Installation                | _____                       | _____                  | _____        |
| 22          | Loam, Seed & Fertilization of Lawns      | _____                       | _____                  | _____        |
| 23          | Lot Grading & Drainage                   | _____                       | _____                  | _____        |
| 24          | Driveways and Walks                      | _____                       | _____                  | _____        |
| 25          | Street Trees & Plantings                 | _____                       | _____                  | _____        |
| 26          | Lot Trees & Tree Preservation            | _____                       | _____                  | _____        |
| 27          | Conservation Compliance                  | _____                       | _____                  | _____        |
| 28          | Clean Up (All Construction Sites)        | _____                       | _____                  | _____        |
| 29          | Certification / Fire Alarm Installation  | _____                       | _____                  | _____        |
| 30          | Certification of Monuments               | _____                       | _____                  | _____        |
| 31          | As Built Drawings                        | _____                       | _____                  | _____        |

Notes:  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

## VETERANS WAY BOND ESTIMATE

Gravel grade to finished subdivision

revised: March 28, 2023

| ITEM                                      | UNIT | QUANTITY | UNIT PRICE   | AMOUNT       |
|---|------|----------|--------------|--------------|
| <b><u>SITE WORK</u></b>                   |      |          |              |              |
| Erosion Control                           | LS   |          | \$ 5,000.00  | \$ -         |
| Clearing & Grubbing                       | ACRE |          | \$ 12,000.00 | \$ -         |
| Gravel Earthwork (Cut&Fill)               | CY   |          | \$ 12.00     | \$ -         |
| Earthwork (15% Ledge)                     | CY   |          | \$ 55.00     | \$ -         |
| Gravel Borrow                             | CY   |          |              | \$ -         |
| <b><u>SEWER</u></b>                       |      |          |              |              |
| Sewer Main PVC Pipe                       | LF   |          | \$ 120.00    | \$ -         |
| Sewer Manholes incl. Frame and Cover      | EA   |          | \$ 12,000.00 | \$ -         |
| Drop Sewer Manholes incl. Frame and Cover | EA   |          |              | \$ -         |
| Wyes                                      | EA   |          | \$ 65.00     | \$ -         |
| Chimneys                                  | LF   |          |              | \$ -         |
| Laterals                                  | EA   |          | \$ 1,800.00  | \$ -         |
| Earth Excavation                          | CY   |          | \$ 15.00     | \$ -         |
| Rock Excavation                           | CY   |          | \$ 40.00     | \$ -         |
| Gravel Borrow                             | CY   |          | \$ 30.00     | \$ -         |
| Additional Crushed Stone                  | CY   |          |              | \$ -         |
| <b><u>DRAINAGE</u></b>                    |      |          |              |              |
| Drain Pipe                                | LF   |          | \$ 75.00     | \$ -         |
| Drain Manholes incl. Frame and Cover      | EA   |          | \$ 10,000.00 | \$ -         |
| Catch Basins incl. Castings               | EA   |          | \$ 10,000.00 | \$ -         |
| Earth Excavation                          | CY   |          | \$ 15.00     | \$ -         |
| Rock Excavation                           | CY   |          | \$ 40.00     | \$ -         |
| Gravel Borrow                             | CY   |          | \$ 30.00     | \$ -         |
| Additional Crushed Stone                  | CY   |          |              | \$ -         |
| Storm Septor                              | EA   |          | \$ 20,000.00 | \$ -         |
| Drainage Outlet Structure                 | EA   |          | \$ 3,500.00  | \$ -         |
| Tree wells                                | EA   |          | \$ 10,000.00 | \$ -         |
| <b><u>DETENTION POND</u></b>              |      |          |              |              |
| Clearing & Grubbing (deloam/stockpile)    | ACRE |          | \$ 12,000.00 | \$ -         |
| Earth Excavation                          | CY   |          | \$ 15.00     | \$ -         |
| Grading                                   | SY   |          | \$ 2.50      | \$ -         |
| Loam                                      | CY   | 4        | \$ 35.00     | \$ 140.00    |
| Seed & Fertilizer                         | SY   | 285      | \$ 4.15      | \$ 1,182.75  |
| Hay Bales                                 | LF   |          |              | \$ -         |
| Rip Rap                                   | CY   |          | \$ 32.00     | \$ -         |
| Engineering (layout, as-builts)           | LS   | 1        | \$ 10,000.00 | \$ 10,000.00 |

| ITEM                                    | UNIT | QUANTITY | UNIT PRICE  | AMOUNT      |
|---|------|----------|-------------|-------------|
| <b><u>WATER</u></b>                     |      |          |             |             |
| Water Main Pipe                         | LF   |          | \$ 100.00   | \$ -        |
| Gate Valves                             | EA   |          | \$ 3,800.00 | \$ -        |
| Hydrants                                | EA   |          | \$ 3,200.00 | \$ -        |
| Tees                                    | EA   |          |             | \$ -        |
| Bends                                   | EA   |          |             | \$ -        |
| Corporation Stops                       | EA   |          | \$ 750.00   | \$ -        |
| Curb Stops                              | EA   |          | \$ 125.00   | \$ -        |
| Copper                                  | LF   |          | \$ 8.50     | \$ -        |
| Earth Excavation                        | CY   |          |             | \$ -        |
| Rock Excavation                         | CY   |          |             | \$ -        |
| Gravel Borrow                           | CY   |          |             | \$ -        |
| Additional Crushed Stone                | CY   |          |             | \$ -        |
| <b><u>ROAD BASE</u></b>                 |      |          |             |             |
| Grading (Sub-Grade)                     | SY   |          | \$ 2.50     | \$ -        |
| Gravel Borrow                           | CY   |          | \$ 25.00    | \$ -        |
| Grading , Rolling, Finishing            | SY   |          | \$ 3.10     | \$ -        |
| <b><u>ROADWAY</u></b>                   |      |          |             |             |
| Bit. Conc. Binder Course (2")           | TON  |          | \$ 135.00   | \$ -        |
| Bit. Conc. Leveling Course (1")         | TON  |          | \$ 135.00   | \$ -        |
| Bit. Conc. Top Course (1½")             | TON  |          | \$ 135.00   | \$ -        |
| Adjust Structures                       | EA   |          | \$ 250.00   | \$ -        |
| Adjust Valve Boxes                      | EA   |          | \$ 150.00   | \$ -        |
| <b><u>SIDEWALK</u></b>                  |      |          |             |             |
| Excavation                              | CY   |          |             | \$ -        |
| Gravel                                  | CY   |          | \$ 25.00    | \$ -        |
| Bit. Conc. Sidewalk Binder Course (1½") | TON  |          | \$ 150.00   | \$ -        |
| Bit. Conc. Sidewalk Top Course (1½")    | TON  |          | \$ 150.00   | \$ -        |
| <b><u>GRANITE CURB/ASPHALT BERM</u></b> |      |          |             |             |
| Straight                                | LF   |          | \$ 45.00    | \$ -        |
| Radius                                  | LF   |          | \$ 55.00    | \$ -        |
| Corner                                  | EA   |          | \$ 275.00   | \$ -        |
| Inlet                                   | EA   |          | \$ 350.00   | \$ -        |
| Asphalt Berm                            | LF   |          | \$ 6.00     | \$ -        |
| Granite Stone Bounds                    | EA   | 12       | \$ 450.00   | \$ 5,400.00 |
| Handicap Ramps                          | EA   |          | \$ 3,500.00 | \$ -        |
| <b><u>TREE LAWN</u></b>                 |      |          |             |             |
| Loam                                    | CY   | 10       | \$ 35.00    | \$ 350.00   |
| Seed & Fertilizer                       | SY   | 130      | \$ 4.15     | \$ 539.50   |
| Trees                                   | EA   | 18       | \$ 325.00   | \$ 5,850.00 |
| <b><u>RETAINING WALL</u></b>            |      |          |             |             |
|   | FSF  |          | \$ 50.00    | \$ -        |



| ITEM                                     | UNIT | QUANTITY | UNIT PRICE       | AMOUNT       |
|--|------|----------|------------------|--------------|
| <b><u>ELECTRICAL/CABLE/TELEPHONE</u></b> |      |          |                  |              |
| Street Light Pole and Wiring             | LS   |          | \$ 35,000.00     | \$ -         |
| <b><u>GAS MAIN/SERVICES</u></b>          |      |          |                  |              |
| <b><u>PLANTING ISLAND</u></b>            |      |          |                  |              |
| Shrubs                                   | LS   |          | \$ 5,000.00      | \$ -         |
| <b><u>STOCKADE FENCE</u></b>             |      |          |                  |              |
| <b><u>SLOPE EASEMENT</u></b>             |      |          |                  |              |
| Earthwork (Cut&Fill)                     | CY   |          | \$ 12.00         | \$ -         |
| Loam                                     | CY   | 0        | \$ 35.00         | \$ -         |
| Grading                                  | SY   |          | \$ 2.50          | \$ -         |
| Seed & Fertilizer                        | SY   | 0        | \$ 4.15          | \$ -         |
| <b><u>MISCELANEOUS</u></b>               |      |          |                  |              |
| Kiosk for Trailhead                      | LS   | 1        | \$ 1,000.00      |              |
| <b><u>CLEAN UP</u></b>                   |      |          |                  |              |
| Catch Basins                             | EA   | 2        | \$ 125.00        | \$ 250.00    |
| Street Sweeping                          | LS   |          | \$ 500.00        | \$ -         |
| Site Clean up                            | LS   | 1        | \$ 2,000.00      | \$ 2,000.00  |
| <b><u>TESTING</u></b>                    |      |          |                  |              |
| Sewer Pressure Test                      | LF   |          | \$ 20.00         | \$ -         |
| Water Pressure Test                      | LF   |          | \$ 30.00         | \$ -         |
| Disinfection                             | LF   |          | \$ 35.00         | \$ -         |
| <b><u>ENGINEERING</u></b>                |      |          |                  |              |
| As-Built                                 | LS   | 1        | \$ 18,000.00     | \$ 18,000.00 |
| Street Acceptance                        | LS   | 1        | \$ 3,500.00      | \$ 3,500.00  |
| Bound Certification                      | LS   | 1        | \$ 5,000.00      | \$ 5,000.00  |
|  |      |          | <b>Sub-total</b> | \$ 52,212.25 |
|  |      |          | <b>10% Cont.</b> | \$ 5,221.23  |
|  |      |          | <b>Total</b>     | \$ 57,433.48 |



**Town of Reading**  
**16 Lowell Street**  
**Reading, MA 01867**

**Andrew MacNichol**  
**Community Development Director**  
Phone: 781.942-6670  
Fax: 781.942-9071  
Website: [www.readingma.gov](http://www.readingma.gov)

December 12, 2022

**Downtown Smart Growth District (DSGD) Plan Review**  
**M.G.L. Chapter 40R**  
**DECISION**

Project: 25 Haven Street  
Applicant: 25 Haven Street, LLC

*To the Town Clerk:*

*This is to certify that, at a public hearing of the Community Planning and Development Commission opened on June 13, 2022, continued to November 7, 2022, December 12, 2022 and closed on XXX by a motion duly made and seconded, it was voted:*

“We, the Reading Community Planning and Development Commission, upon request from 25 Haven Street, LLC, under Section 10.5 of the Zoning Bylaws of the Town of Reading, and MGL Chapter 40R, to consider the application for 40R Development Plan Review to construct a 4-story mixed-use building with 12 housing units, and approximately 3,850 square feet of interior commercial space with 16 at-grade parking spaces, at 25 Haven Street (Assessors Map 16, Lot 309) – as shown on the architectural plans prepared by O’Sullivan Architects, Inc. and the site plans prepared by Hayes Engineering, Inc., and listed below – do hereby vote XXX, to \_\_\_\_\_ the 40R Development Plan, inclusive of the listed waivers, subject to the Findings and Conditions below.”

Materials Submitted:

The following materials were submitted into the public record:

- a) Certified List of Abutters, dated 4/19/22;
- b) DSGD Development Application Form, Project Narrative and Requested Waivers, dated 5/2/22;
- c) Legal Notice, published in the Daily Times Chronicle on 5/25/22 and 6/1/22, and posted with the Town Clerk on 5/25/22;
- d) Civil Engineering Plan Set for 25 Haven Street Proposed 40R Development, Reading, MA, prepared by Hayes Engineering, Inc., and prepared for 25 Haven Street, LLC., consisting of:
  - a. Sheet C-1: Index Plan, dated 11/22/22;
  - b. Sheet C-2: Existing Conditions Plan, 11/22/22;
  - c. Sheet C-3: Demolition and Relocation Plan, dated 11/22/22;
  - d. Sheet C-4: Site Layout Plan, dated 11/22/22;
  - e. Sheet C-5: Grading and Drainage Plan, dated 11/22/22;
  - f. Sheet C-6: Utility Plan, dated 11/22/22;

- g. Sheet C-7: Details Sheet, dated 11/22/22;
- h. Sheet C-8: Details Sheet, dated 11/22/22;
- e) Architectural Plan Set for 25 Haven Street Redevelopment, Reading, MA, prepared by O’Sullivan Architects, Inc., and prepared for 25 Haven Street, LLC, consisting of:
  - a. Sheet A0.01: Project Data, originally dated 4/29/22, most recently revised 11/28/22;
  - b. Sheet A0.02: Schematic Landscape Layout Plan, originally dated 4/29/22, most recently revised 11/28/22;
  - c. Sheet A0.03: Shadow Studies, originally dated 4/29/22, most recently revised 11/28/22;
  - d. Sheet A0.04: Layout and Photometric Plan, originally dated 4/29/22, most recently revised 11/28/22;
  - e. Sheet A1.01: Ground Floor Plan, originally dated 4/29/22, most recently revised 11/28/22;
  - f. Sheet A1.02: Second Floor Plan, originally dated 4/29/22, most recently revised 11/28/22;
  - g. Sheet A1.03: Third Floor Plan, originally dated 4/29/22, most recently revised 11/28/22;
  - h. Sheet A1.04: Fourth Floor Plan, originally dated 4/29/22, most recently revised 11/28/22;
  - i. Sheet A1.05: Roof Level Plan, originally dated 4/29/22, most recently revised 11/28/22;
  - j. Sheet A3.01: Elevations Front and Rear, originally dated 4/29/22, most recently revised 11/28/22;
  - k. Sheet A3.02: Elevations Left and Right, originally dated 4/29/22, most recently revised 11/28/22;
  - l. Sheet A3.10: Perspectives, originally dated 4/29/22, most recently revised 11/28/22;
  - m. Sheet A3.11: Perspectives, originally dated 4/29/22, most recently revised 11/28/22;
  - n. Sheet A3.12: Perspectives, originally dated 4/29/22, most recently revised 11/28/22;
- f) Sheet A4.01: Sections, originally dated 4/29/22, most recently revised 11/28/22;
- g) Stormwater Management Report: 25 Haven Street Mixed-Use Development in Reading, MA, dated 11/22/22;
- h) Transportation Impact Assessment, 25 Haven Street Mixed-Use Development, prepared by Vanasse & Associates, Inc., dated October 2020;
- i) Staff Input:
  - a. Email from Reading Fire Department Captain Nelson, dated 11/30/22;
  - b. Memo from Town Engineer, dated XXX;
- j) Abutter Input:
  - a. Email from Ilene Bornstein, dated 5/31/22;
  - b. Email from Jonathan Barnes, dated 11/3/22;
  - c. Email from Jonathan Barnes, dated 11/30/22;
  - d. Email from Samantha Couture, dated 12/2/22;
- k) Draft Decision, dated 12/12/22.

**General Findings:**

- 1) **Zoning:** The site is located within the underlying Business-B Zoning District and the Downtown Smart Growth District (DSGD) / 40R Overlay District. Sites and areas located to the north, south, east and west are also located in the Business-B and DSGD Zoning Districts.

The site is considered a Transitional Area (directly abutting a lot containing single-family dwelling).

→Therefore, Section 10 of the Design Guidelines applies to this redevelopment.

**Commented [MJ1]:** Look for language in DG re: RHC review/approval

"7.2.5 Existing building facades with architectural significance are to be incorporated into new construction wherever feasible. Protected buildings can be changed only with the approval of the Reading Historical Commission."



- 2) **Overview:** The land totals 18,935 square feet in area and maintains ~186.78 linear feet of frontage along Haven Street to the north and ~119.51 linear feet of frontage along Green Street to the south. The site is abutted by: Haven Street to the north; both a single-family dwelling and a one-story commercial building to the east; Green Street to the south, and; a two-story commercial building to the west.

The existing site contains a vacant ~7,953 square-foot, single-story commercial structure and associated parking. It was formerly a Reading Municipal Light Department building, and subsequently owned and occupied by a series of convenience stores, the most recent of which was Rite Aid (which was then bought by Walgreens). The site contains one curb cut along Haven Street and another curb cut along Green Street.

The Applicant proposes to redevelop the site into a Mixed-Use 40R Development including twelve (12) residential dwelling units. The project is proposed as homeownership units, and is under the unit threshold so does not require any deed-restricted affordable units. It will also include a total of ~3,850 square-feet of interior commercial space on the first-floor, with an 875 square-foot commercial patio area, and sixteen (16) associated parking spaces located at-grade. All sixteen (16) parking spaces are located in an at-grade parking lot; seven (7) of the spaces are located under the building roof line and the remaining nine (9) spaces are fully exposed to the elements. The parking lot is accessed by a 26-foot wide two-way driveway on Green Street.

The Applicant is seeking Development Plan approval from the CPDC under Section 10.5 of the Reading Zoning Bylaw and the Downtown Smart Growth District Design Standards & Guidelines, pursuant to M.G.L. Chapter 40R.

- 3) **Historic:** The existing building is listed on the local Reading Historical Inventory and is subject to a demolition delay. On July 28, 2021 the Reading Historical Commission (RHC) voted to impose a demolition delay on the property for up to six (6) months. On January 28, 2022 the demolition delay elapsed and was lifted.
- 4) **Setbacks and Dimensional Requirements:** The proposed building will have a 2' front yard setback from the northern lot line (Haven Street); a 10' side yard setback from the western lot line (adjacent to 1 Haven Street); a minimum 16' side yard setback from the eastern property line (adjacent to 51 Haven Street and 12 Green Street); and a minimum 25' rear yard setback from Green Street.

**Building Height:** For structures with flat roofs, 'height' is defined in Section 2.0 of the Reading Zoning Bylaw as *"The vertical distance from the average grade around the perimeter of a building to the top of a flat roof, including any parapet..."* Height is not defined separately or differently for 40R projects within ZBL Section 10.5, and mixed-use 40R projects are allowed a maximum height of 45' unless a height waiver can be justified.

Design of a flat roof with a metal roof coping is utilized. The elevator penthouse and mechanical units are proposed to be located on the roof and be setback and/or screened from view.

Section 10.4.1 of the Design Guidelines requires the following: “*building height shall be measured from the pre-development site grade.*” The maximum building height, to the parapet, based off of the pre-development site grade, is 44’. While not accounting towards maximum height requirements it should be noted that the elevator penthouse measures X’ in height and the stairwell measures X’ in height bringing maximum building height to X’.

Commented [MJ2]: Does it extend above the roofline?

**Building Step-backs:**

**Lot Coverage:** The lot totals ~18,935 square-feet of area, 8,994 square feet will be covered by the building, resulting in a 47.5% Lot Coverage calculation. Including associated parking, which is exempt under the definition, total impervious area calculates to 13,070 square feet (69%).

- 5) **Interior/Exterior Space:** The proposed project will comprise +/-30,009 net enclosed square feet, as follows: +/-8,637 (1<sup>st</sup> floor); +/-8,416 (2<sup>nd</sup> floor); +/-8,416 (3<sup>rd</sup> floor); +/-4,540 (4<sup>th</sup> floor); and +/-0 (roof). The first-floor/garage level includes seven (7) parking spaces dedicated the residential use, along with a residential lobby, a parking lot lobby, a trash room, a water room, an electrical room, the elevator, an elevator machine room, two stairwells, and the commercial spaces.

Commented [MA3]: Garage storage areas and bike parking accommodations? More utility space needed?

Commercial Space #1 shall include 2,388 gross floor area of interior space as well as an adjacent 875 gross floor area private outdoor patio space. Commercial Space #2 shall include 1,461 gross floor area of interior space. Each commercial space will have a separate and individual entrance off of Haven Street. Commercial Space #1 shall also have exterior access through the eastern public path and Commercial Space #2 shall be provided a secondary access through the rear lobby/parking area.

Two (2) one-bedroom units and ten (10) two-bedroom units are proposed, for a total of twelve (12) units. One-bedroom units average 764.5 net square feet, and two-bedroom units average 1,463 net square feet.

All residential units shall be provided with private balconies or access to private outdoor patios. Sizes of each varies in both width and length but are a minimum of 7’ x 10’. There is also a shared residential terrace on the 4<sup>th</sup> floor that totals 730 net square feet. There are no enclosed areas on the roof and there will be no public access to such.

- 6) **Roof:** Mechanical units located on the roof shall be placed so that they are not viewable from the street level or abutting residential properties. The elevator shaft is approximately X’ tall.
- 7) **Parking:** The project provides 16 parking spaces, which is 1 space more than required and results in a 1.33 spaces/unit ratio. Seven (7) of the parking spaces will be covered by the building while the other nine (9) parking spaces will be fully exposed to the elements. All of the spaces are dimensioned at 9’ x 18’, and one (1) space within the garage will be ADA accessible. The parking lot is accessed via a 26’ two-way drive on Green Street and maintains a 26’ wide two-way drive aisle. All parking spaces shall be designed and future proofed for use of Electric Vehicle Charging Stations.

The curb cut on Haven Street will be closed and two (2) on-street parking spaces will be added. The existing curb cut on Green Street will be relocated to the west and will result in the net loss of XXX parking spaces.

**Commercial Parking:** The site is within 300' of a municipal lot (Brande Court) and is exempt from providing off-street commercial parking. Also, as the proposed commercial spaces are expected to be occupied by retail and/or restaurant uses, zero (0) off-street parking spaces are required per Reading Zoning Bylaw Section 10.5.8:

#### 10.5.8.1 Off-Street Parking

**Off-street parking shall be provided to meet the following minimum requirements:**

**Retail or Restaurant 0 spaces**

**Loading / Deliveries:** Front door and on-street deliveries are not allowed to occur on Haven Street or Green Street. Loading is proposed to occur within the outdoor parking and includes access to the trash room. A [ ]' x [ ]' temporary loading zone is shown utilizing the parking aisle in front of the covered parking spaces near the entry lobby and trash room. A drive aisle of 12'-14' shall remain if a truck is utilizing the loading zone. Commercial loading and deliveries will occur during off-peak traffic hours and the size and nature of the commercial space is expected to be served by box trucks and vans, and not trailer trucks. Commercial deliveries shall be provided access to the commercial area from within the garage. The same is expected for both residential move-ins/outs, which shall be managed and scheduled by the property management company.

**Bicycle Parking:** none proposed.

- 8) **Sidewalk Improvements:** The existing sidewalk will be replaced with new concrete sidewalk and vertical granite curbing to match existing. Sidewalk shall be extended down Haven Street along the property's entire frontage. Vertical Granite Curbing shall also be utilized around the outdoor parking area.
- 9) **Traffic Flow and Volume:** A Transportation Impact and Access (TIA) study was completed for the project by Vanasse Associates, Inc.

**The TIA concludes with the following information/recommendations:**

•

- 10) **Drainage and Grading:** The existing site is relatively flat in grade and is nearly 100% impervious area due to the existing building and its associated parking. Redevelopment will incorporate Best Management Practices (BMP's) and Low Impact Design (LID) strategies and result in a net loss of 1,200 square feet of impervious area. LID measures include an infiltration system that mimics the natural runoff rate as the existing conditions.

The site will be graded in a manner to avoid puddling on the premises and to promote positive sheet flow away from the building. All surface runoff from the site will be collected in the closed drainage system so that there is no direct discharge to the surface of any abutting land.

**Commented [MA4]:** Is this the expectation?

**Commented [MA5R4]:** What is height clearance in garage? Can trucks of all sizes be accommodated?

**Commented [MJ6]:** The trash room doors open into a parking space – how will this work if there is a car parked there?

Also, re: the temporary loading space needs to be dimensioned – If delivery access to Commercial Space #1 is proposed via the back door, then I'd think the truck would pull all the way in to the end of the drive aisle. How does it impact/imposed use of residential spaces?

**Commented [MA7]:** This may be difficult when allowing entry and exit.

**Commented [MA8]:** Plans do not indicate any upgrades to sidewalk?



Stormwater runoff will be mitigated through the on-site infiltration system. The system will be designed to capture the 100-year storm event.

Roof and surface runoff will be captured and directed to the underground retention system prior to discharging into the municipal system. Stormwater treatment will be collected by deep-sump basin with an oil water separator. This provides enhanced pollutant removal from the stormwater by separating out Total Suspended Solids (TSS) and floatable oil/grease.

A final stormwater system long-term Operations and Maintenance Plan has been prepared. The Plan details measures to be taken by the property owner to ensure long-term sustainability of the system, which shall be conditioned below. The Plan includes, but is not limited to, schedules for inspections and maintenance, estimated costs of maintenance, safety measures, and responsible entity. A separate construction phase BMP plan has been drafted and shall followed throughout permitting.

- 11) Utilities: All utilities will be removed and re-connected through both Haven Street and Green Street as applicable. The existing sewer line will be cut and capped at the main within the right-of-way and shall be replaced with a PVC pipe. An oil water separator will be provided within the garage level and connected to the sewer line. An existing drain line through the property will be replaced with a new ductile iron drain and be relocated within the right-of-way. The domestic water service and a new fire service will be tapped from the water main within Haven Street. Electric, telephone and fiber optic services will be extended from Green Street. Natural gas will also be extended from the main on Haven Street and will be coordinated with the utility company. A grease trap shall also be provided for the commercial uses and will be located to align with future restaurant/kitchen location(s). All proposed utilities will be underground.
- 12) Lighting: A series of exterior lighting fixtures on the building's façade and within the exterior parking area is proposed. All exterior lighting shall be designed to be Dark Sky compliant and mitigate impacts to abutting residential properties; limited up-lighting is allowed in accordance with Design Guidelines Section 8.4.6.
- 13) Property Management: The property is proposed to be managed by a property management company.
- 14) Transformer: An electric utility plan shall be submitted and approved by RMLD. The transformer shall be located along Green Street and be screened from the street.
- 15) Wetlands / Floodplain: There are no wetland resource areas or buffers on or near the site, and the site is not within a 100-year floodplain.
- 16) Landscaping: Eleven (11) new trees are proposed on site – four (4) of which are to be street trees within the sidewalk along Haven Street. A series of additional shrubs and plantings is proposed along the site's property line. A pocket park will be developed in the southeast corner of the site and include a series of plantings and seating areas.
- 17) Trash Management: Trash and recycle bins shall be located within the garage. Trash is to be managed by a private entity. Language detailing how trash and recycling will be managed on-

Commented [MA9]: Is this true?

site, including but not limited to schedule of pick-up days and times, and logistics for trash truck access to the site shall be described within the property management documents. Trash management for both the residential and retail uses shall be managed separately, as is practicable.

- 18) **Signage:** No building signage is approved herein. Any future signage shall require the submittal of a Sign Permit Application and shall comply with Section 8.0 of the Zoning Bylaw and Section 9.0 of the Downtown Smart Growth District Design Guidelines.

### **Findings pursuant to DSGD Design Standards & Guidelines:**

#### **7. Building Design Standards**

##### **7.1 Massing**

**7.1.1 Front Façade Setback** – Over 60% of the Haven Street façade is setback at 2' and the space between is designed to better activate the pedestrian entries. Additional active uses (i.e. outdoor commercial patio) and landscape is proposed along the front setback.

**7.1.2 Building Step-Back Requirements** – The building maintains a 25'-28'5" step-back at the fourth-floor level along the front façade. The same fourth-floor level also maintains a 12'7" step-back on the western façade. The step-backs are maintained for the entirety of the fourth-floor level.

**7.1.3 Mixed-Use Building Proportions** – The building's commercial space is provided horizontal brick work and large glass paned windows. Residential floors above are provided projecting bays, composite vertical panels, and balconies to differentiate from the retail uses below.

**7.1.4 Special Function Space Differentiation** – Not applicable to the current proposal; however, the Applicant is encouraged to think about community place-making events when approaching commercial tenants.

##### **7.2 Appearance**

**7.2.1 Defined Proportions** – The project uses projecting bays, balconies, a composite paneling system of different colors and a flat rooftop design to define different levels of the façade.

**7.2.2 Horizontal and Vertical Elements** – Horizontal elements such as brick masonry, trim, and large framed windows are combined with vertical projecting bays, at different levels. Materials shall be submitted to CPDC for review.

**7.2.3 Continuous Façade Elements** – Façade elements and materials are used continuously around the façade.

**7.2.4 Rooftop Mechanical Setbacks** – Mechanical units on the rooftop level are setback so as to not be visible from the pedestrian level.

**7.2.5 Incorporation of Existing Significant Building Facades** – The building form adapts in scale and texture to create continuity with abutting properties.

**7.2.6 Franchise Architecture** – Distinctive building design that is trademarked or identified with a particular chain or corporation and is generic in nature, is not allowed in the DSGD – the Applicant shall be aware of this when recruiting tenants.

### 7.3 Entries

**7.3.1 Articulation** – Commercial spaces are provided along Haven Street and are articulated through masonry design, signage, and recessed entries. The residential entry on Haven Street is flush with the rest of the building.

**7.3.2 Retail and Commercial Entry Transparency** – Commercial space is designed to activate Haven Street. Commercial spaces have large glass window panels for visibility.

**7.3.3 Integrated Lighting & Signage** – Exterior lighting has been designed around the entire perimeter of the building. Lighting shall activate entry ways and the commercial patio and illuminate the rear parking area.

**7.3.4 Upper Floor Entries** – The entry to upper floor residential areas shall be made distinct upon entering through the residential lobby on Haven Street.

### 7.4 Fenestration

**7.4.1 Commercial Horizontality & Residential Verticality** – Commercial spaces are designed with over 60% of their façade length being glass window panels. Residential portions of the building have windows designed with a 2/6 muntin grid to balance verticality and horizontality.

**7.4.2 Glazing** – Commercial spaces are designed with over 60% of their façade length being glass window panels. Retail or restaurant uses were stated as intended tenants to provide activation of the areas and limit tint of the windows.

**7.4.3 Overhanging Awnings or Canopies** – Not applicable to application.

### 7.5 Materials

**7.5.1 Exterior Finishes** – A combination of horizontal brick veneer and vertical composite paneling of different colors with aluminum finishing is used on building façades.

**7.5.2 Prohibited Materials** – Not Applicable.

**7.5.3 Changes in Materials** – The first-floor will consist of a brick masonry to transition from the sidewalk to the building structure. Commercial spaces will utilize large windows inserted into the masonry storefronts. Residential spaces and entries above will differentiate themselves by utilizing the composite paneling, aluminum balconies and finishing. Recessed and projecting bays shall utilize different colors of the composite paneling. The fourth-floor will also utilize a different color of composite material than the levels below. Materials shall be submitted to CPDC for review.

**7.5.4 Continuity of Materials** – Façade elements and materials are used continuously around the façade.

**7.5.5 Blank Facades Not Permitted** –

## 8. Site Design Standards

### 8.1 Sidewalks

**8.1.1 Sidewalk Continuity** – The existing curb cut on Haven Street will be removed and replaced with sidewalk. The existing curb cut on Green Street will be relocated to the west and sidewalk shall be provided in its space.

**8.1.2 Pedestrian Amenities** – The project will provide an 875 gross square foot commercial patio along Haven Street and a separate public pocket park along Green Street. A public path will connect Green Street and Haven Street.

**8.1.3 Usable Open Spaces** – The open space will be programmed dependent on commercial uses, but will most likely be used for pedestrian-centric



activities such as dining and seating. A public path and pocket park shall connect Green Street and Haven Street.

**8.1.4 Pedestrian Improvements** – Improvements to adjacent crosswalks, curbing and sidewalks may be requested by the Town Engineer.

## **8.2 Driveways and Parking**

**8.2.1 Sidewalk Continuity** – The existing sidewalk will be removed and replaced. The curb cut on Haven Street will be replaced with sidewalk while the Green Street curb cut will be relocated and replaced with sidewalk.

**8.2.2 Parking Lots** – The parking shall be located at the rear of the building structure and concealed from public view through landscape and screening. The entry and exit of such will be provided off of Green Street.

**8.2.3 Parking Lots Behind Buildings** – The ground level parking shall be screened by landscape. The parking area will be accessed through Green Street.

**8.2.4 Below-grade Parking** – Not Applicable to application.

**8.2.5 Parking Lot Screening** – The ground level parking will be screened through landscape and plantings.

**8.2.6 Shared Parking** – Shared use of parking between residential and commercial tenants will be encouraged. If the parking area is not fully utilized by residents the Applicant shall look to allow commercial employees or patrons parking access/use. Ride sharing services will be encouraged.

**8.2.7 Pedestrian & Vehicular Safety** – Future recommendations of the Traffic Impact Assessment shall be considered and discussed with the Town's Parking Traffic and Transportation Task Force (PTTTF).

## **8.3 Landscaping**

**8.3.1 Street Trees** – Four (4) street trees shall be planted along Haven Street.

**8.3.2 Retail Frontages** – The final location of street trees shall be determined by the Tree Warden and shall not impede visibility of commercial areas or signage.

**8.3.3 Parking Areas** – The parking area will be screened through a series of plantings along the rear and side lot lines.

**8.3.4 Public Open Spaces** – The project will provide an 875 gross square foot commercial patio along Haven Street and a separate public pocket park along Green Street. A public path will connect Green Street and Haven Street.

**8.3.5 Native Species** – Final determination of street tree species shall be determined by the Tree Warden.

**8.3.6 Preservation of Healthy 6" Caliper Trees** – When feasible, healthy existing trees with a minimum 6" caliper and large canopy shall be preserved.

## **8.4 Lighting**

**8.4.1 Articulation of Building Uses & Entries** – The project will incorporate lighting along the street level façade that will identify major commercial and residential entry ways. Any upper level lighting shall be Dark Sky compliant and designed to mitigate impact to residential abutters.

**8.4.2 Coordination w/Town's Street Lighting & Trees** – All proposed lighting will be coordinated with the Town's street lighting and street trees.

**8.4.3 Light Spillover** – Lighting at upper-level terraced areas shall be designed to minimize impact to abutting properties.

**8.4.4 Public Safety** – All lighting for public safety shall be added to the plans.

**8.4.5 Sign Lighting** – No signage proposed or approved herein.

**8.4.6 Dark Sky Standards** – All upper floor lighting shall comply with dark sky standards.

#### **8.5 Utility Areas and Utilities**

**8.5.1 Location** – The trash area will be provided access to/from the rear parking area. The trash area will be situated near garage entry. Mechanical units will be located on the roof and will not be visible from the street. **Utility meter locations?**

**8.5.2 Screening** – All rooftop mechanicals will be setback so they are not viewable from street level.

**8.5.3 Shared Utility Areas** – Not Applicable.

**8.5.4 Aboveground Utilities Not Permitted** – All utilities will be underground.

**8.5.5 Underground Utilities Required** – All utilities will be underground.

#### **8.6 Drainage and Storm Water Management**

**8.6.1 BMP/LID Strategies** – Roof and surface runoff will be captured and directed to the underground retention system prior to discharging into the municipal system. The project will not create new untreated discharge of stormwater runoff.

**8.6.2 System Elements** – Stormwater will be collected through a deep sump basin equipped with a separator to enhance treatment.

**8.6.3 Operations & Maintenance Plan** – A long term O&M Plan has been provided.

**8.6.4 On-site Recharge** – On-site recharge has been provided.

**8.6.5 Pervious Paving** – Not Applicable to application.

**8.6.6 Site Grading** – As existing, the site is proposed to remain relatively flat.

**9. Signage Design Standards** – No building signage has been proposed or approved herein.

#### **10. Additional Considerations for District Edges & Transitional Areas**

**10.3 Applicability** – The site is designated as a Transitional Area as it abuts an existing two-family structure to the east.

##### **10.5 Design Considerations for Transitional Areas**

**10.5.1 Abutting Historic Structures** – Not Applicable to application.

**10.5.2 Density of Project away from Residential Use** – The building structure is setback 16' from the eastern lot line where it abuts an existing commercial structure. Where the lot abuts the existing two-family structure to the east no structures are proposed and parking shall not directly face the structure. The parking lot is screened through a public path and series of landscape plantings.

**10.5.3 Engage Existing Residential Fabric** – Inviting landscape and residential amenities (i.e. pocket park, balconies) are used to engage the residential fabric of Green Street.

**10.5.4 Screen for Residential Privacy** – A series of landscape plantings and public amenities (i.e. path and pocket park) will screen the parking area.

**10.5.5 Shadow Study** – A shadow study has been provided.

**10.5.6 Noise Mitigation** – Mechanical units located on the roof shall be placed so that they are not heard from the street level or abutting residential properties.

**Waivers pursuant to Section 10.5.12 and DSGD Design Standards & Guidelines:**

Upon request of the Applicant, the Commission, in the interests of design flexibility and overall project quality, and upon a finding of consistency of such variation with the overall purpose and objectives of the DSGD and the Reading Master Plan, or if it finds that such waiver will allow the project to achieve the density, affordability, mix of uses and/or physical character allowed. The Commission shall take into consideration the following items when considering a waiver:

1. High performance energy efficient buildings and construction methods.
2. Projects with publicly accessible open space.
3. Projects that include retail and restaurants located on street level.
4. A demonstrated shared parking initiative that makes efficient use of land and existing parking supply.
5. The preservation or rehabilitation of historic properties or other buildings considered significant to the Town.

The Applicant has requested the following waivers from ZBL Section 10.5:

1. **Density:** *to allow a density of 27.9 units/acre where 20 units/acre is permitted by right.* The Applicant stated this will allow the development to be economically viable and notes that the Floor Area Ratio (FAR) of 1.58 is below the maximum of 2.80 allowed.

*The CPDC voted XXX to \_\_\_\_\_ the requested waivers.*

**Conditions:**

**General:**

- 1) **Public Health, Safety and Welfare:** If, at any time, the site becomes a nuisance to public health, safety or welfare (i.e., traffic spillover, excessive noise, unreasonable site illumination beyond the hours of operation, etc.) – as shall be evidenced by substantiated complaints to the Police Department or Public Services Office – the Applicant/Owner shall agree to work with staff to rectify the problem. Should the situation warrant it, an additional Site Plan Review by the CPDC may be required.
- 2) **Utilities:** All utilities, structures, frames and covers shall meet the Town of Reading standards. The electric utility plan is subject to approval by the Reading Municipal Light Department (RMLD).
- 3) **MS4 Permit:** The project shall comply with the most recent MS4 permit.
- 4) **Lighting:** The Applicant shall ensure that any proposed lighting is not occluded by the street trees along the frontage, and does not compete with existing street lighting. The Applicant shall submit specifications for each type of lighting fixture to the Community Development Director for approval.
- 5) **Limitations / Future Uses:** The 40R Development Plan Decision herein does not include approval for any future uses or site renovations that may – on their own merits and design – trigger the requirements of 40R plan review, or site plan review, and/or require a special permit. Pursuant to Section 10.5 of the Zoning Bylaw the following uses are permitted by

**Commented [MA10]:** Anything needed for historic review and input? Look at Chronice/Gould/Postmark



right within the proposed commercial spaces: office, retail, restaurant, institutional and consumer services.

- 6) **Commercial Spaces:** It is strongly recommended that the Applicant prep the commercial space(s) with utility connections, grease traps, etc. in anticipation of future tenants.
- 7) **Engineering Concerns:** In general, throughout the project, the Applicant shall work with the Town Engineer to address any outstanding comments in the memos to the Community Development Director dated XXX.
- 8) **Shared Parking:** The Applicant is encouraged to engage in conversations with nearby property owners regarding shared parking, and to partner with Zip Car and other shared services if possible, and to provide electric vehicle charging stations. If and when progress on shared parking is made, the Applicant shall provide more information about these amenities, and indicate which area(s) of the garage are intended for them and how they will be managed.
- 9) **Storage Areas:** The Applicant is encouraged to consider adding supplemental storage areas for tenants to the building if possible.
- 10) **Community Place-making / Creative Economy:** When approaching potential commercial tenants, the Applicant is encouraged to think about community place-making events, and/or dividing the space into smaller units that are affordable to creative economy tenants.
- 11) **Historic:** If possible, the Applicant shall salvage some bricks/tiles from the existing building and replicate the pattern on an accent wall in the exhibit gallery, and shall consider mimicking the existing art deco design elements in the new building's signage design.

**Commented [MA11]:** Can Applicant confirm such would be included in residential lobby in building not preserved?

#### **Prior to the Issuance of Building Permits and Prior to the Start of Construction:**

- 1) **The Applicant shall make the following plan changes, and shall submit two (2) full size (24x36) copies of the revised plans to the Community Development Director:**
- 2) **Other Permits:** The Owner/Applicant is responsible for obtaining all other requirements and permits including but not limited to, utility connections, sewer, water, curb cut, street opening and Jackie's Law excavation permits from the Engineering Department (prior to excavation), and Board of Health approvals.
- 3) **Pre-Construction Meeting:** The Owner/Applicant and contractors shall coordinate with the Community Development Director to schedule a pre-construction meeting with Town staff prior to applying for demolition and/or building permits, in order to review these conditions and any and all final construction sequencing, details and plans for this project.
- 4) **Construction Management Plan / Contractor Parking:** The Applicant shall submit a Construction Management Plan which includes provisions for off-site parking.
- 5) **Construction Documents & Fire Safety:** Full construction documents must be submitted and approved by the Fire Department at 80% design. A building permit shall not be issued until the Fire Department has approved the plans.
- 6) **Master Box:** The Applicant shall coordinate with the Fire Department on the requirement for a Master Box tied that is to be tied to the fire alarm system.
- 7) **Materials:** No colors have been approved herein. The Applicant shall return to the Commission with samples of proposed materials and colors to be used on the building prior to installation.

**During Construction:**

- 1) **Construction Hours:** Construction shall be limited to the hours stated in Section 8.9.8 “Construction Hours” of the Reading General Bylaws and said hours shall be posted in a conspicuous place at the entrance prior to any work on the site.
- 2) **Construction Activities:** Construction activities shall be conducted in a workmanlike manner at all times. Blowing dust or debris shall be controlled by the Applicant through stabilization, wetting down, and proper storage and disposal methods, subject to the approval of the Health Agent or designee. The Applicant shall ensure that the abutting local streets are kept clear of dirt and debris, which may accumulate as a result of construction activities for the Project. Documentation shall be provided demonstrating ongoing pest management control, subject to the approval of and administration by the Health Agent.
- 3) **Construction Management Plan / Contractor Parking:** Site operations shall comply with the aforementioned Construction Management Plan at all times. Contractors shall park in the locations designated and provided for within the CMP.
- 4) **Site Inspections:** Town staff or their designee shall have reasonable access to inspect the site to determine compliance with this Decision.
- 5) **Bond:** The Applicant/Owner shall furnish a bond for the final As-Built plans prior to the issuance of the final certificate of occupancy. The bond amount shall be determined by the Town Engineer consistent with the reasonable costs associated with a third party performing the work. The bond shall be returned once the requirements of this condition are met.
- 6) **Scaffolding:** The scaffolding at the property lines shall be completely screened 100% of the time to maintain privacy and prevent materials/debris from falling/blowing or otherwise dropping onto the abutting properties.

**Prior to Vertical Construction:**

- 1) **Covered Parking As-Built:** The Applicant shall provide, to the Building Commissioner and Community Development Director, an as-built of the foundation and covered parking area, that shows an overlay of the location and size of structural columns, fire/building/energy code requirements, and dimensioned parking striping, proving that the parking as approved can work. If the parking cannot work as approved, the Applicant shall return to CPDC for an amendment prior to starting vertical construction.

**Prior to the Issuance of a Certificate of Occupancy:**

- 1) **Architecture:** The building façade on each elevation (north, south, east, and west) shall be substantially as indicated on the approved architectural plans and elevations.
- 2) **Stormwater O&M Plan:** An Operations and Maintenance Plan for the stormwater system shall be provided to the Town Engineer.
- 3) **Property Management Documents:** A copy of the finalized Property Management Documents shall be submitted to the Community Development Director for review and approval, and shall contain the following language:

- a. **Fire Safety:** Language ensuring fire safety by prohibiting gas/propane grills on balconies, etc.
  - b. **Delivery Vehicles & Times:** Language prohibiting commercial deliveries along **Haven Street and Green Street**, and prohibiting commercial deliveries to the commercial space between 10:00 PM and 5:00 AM.
  - c. **Management of Move-ins & Move-outs:** Language regarding management of move-ins and move-outs by the on-site property manager, specifically with regards to the size of moving vehicles allowed and the timing and use of the parking area.
  - d. **Drainage System Maintenance:** Language that requires the property management company to adhere to the requirements of the O&M Plan.
  - e. **Trash Removal:** Language detailing how trash and recycling will be managed on-site, including but not limited to schedule of pick-up days and times, and logistics for trash truck access to the site. Trash management for both the residential and retail uses shall be managed separately, as is practicable.
  - f. **Snow Removal:** Language detailing how snow will be managed and removed from the property, including the roof and uncovered parking area, and that snow storage shall not impact sight lines for vehicular traffic.
  - g. **Site Lighting:** Language that commercial lighting (including signage) shall be programmed to shut off at the close of business each day.
  - h. **Pedestrian Path:** Language outlining responsibility for maintaining the public path through the site, especially during inclement weather, to keep it clear of debris, trash, and snow/ice at all times.
  - i. **Conditions for Ongoing Maintenance after Occupancy:** Language that the property management company shall adhere to the “Conditions for Ongoing Maintenance after Occupancy” as are stated herein below.
- 4) **Rooftop Mechanicals:** All rooftop mechanicals shall be set back from building facades and appropriately screened from view.
  - 5) **Pedestrian Improvements:** Improvements along Haven Street, Green Street, and abutting rights-of-way, as deemed necessary or advantageous to the Town Engineer and Community Development Director, to adjacent crosswalks, curbing and sidewalks, shall be installed at the Applicant’s expense in accordance with Town standards.
  - 6) **Streetscape Design:** The Applicant shall coordinate with the Engineering, Planning, Economic Development, and other staff departments as needed, on the final streetscape design for the Haven Street frontage and Green Street as needed. Design utilizing the Lower Haven streetscape concepts provided by the Town shall be incorporated. The Applicant shall work with Town Staff on the need for potential public easements for a portion of the sidewalk, which shall support the Lower Haven streetscape concepts.
  - 7) **Parking Striping:** All parking spaces shall be striped in accordance with the approved plans. Dimensions shall be measured from centerline to centerline.
  - 8) **I/I Fee:** The Applicant is subject to the required Inflow/Infiltration Fee as the proposed sewer flow usage will be greater than historical usage. The Fee is calculated as twice the flow times \$4.00.



- 9) **Street Trees:** The Applicant shall work with the Tree Warden to locate the street trees along Haven Street to an appropriate location. Both the species and location shall be approved by the Town Tree Warden.
- 10) **Lighting:** All exterior building and site lighting shall comply with the dark sky initiatives (light shall shine down only) with the light source being fully shielded (with cutoff shields) so that little to no light or glare spills onto abutting properties. Spec sheets of proposed lighting fixtures shall be submitted to the Community Development Director for review and approval.
- 11) **Easements:** Necessary easements for the pedestrian pathway(s), streetscape and/or other shall be drafted, approved and recorded. All easements, and agreements, as reviewed by the Community Development Director, Town Engineer and Town Counsel, shall be properly written and recorded.

**Conditions for Ongoing Maintenance after Occupancy:**

- 1) **Parking Utilization Data:** The Applicant shall provide reports to the Community Development Director indicating utilization of the on-site parking and shall work with Town staff to evaluate impacts and make any necessary modifications to the parking space management system described above, including the provision of EV charging infrastructure, Zip Car spaces, etc. if evidenced to be desired by tenants.
- 2) **Signage:** Prior to installation of any building or tenant signage, a Sign Permit Application and/or Master Signage Plan shall be submitted for review and approval.
- 3) **As-Built Plans:** Two full size paper copies and electronic AutoCAD final As-Built plans showing the building footprint, drainage systems and utility connections shall be submitted to the Community Development Director and Town Engineer to ensure compliance with this decision and other applicable Town standards. The bond held for this requirement will be returned to the Applicant once this condition has been fulfilled.
- 4) **Landscaping:** Landscaping on-site shall be maintained in a healthy condition in perpetuity. In the event that landscaping is damaged during snow removal operations, the property owner shall replace such landscaping during the next growing season.
- 5) **Lighting:** All exterior building and site lighting shall comply with the dark sky initiatives (light shall shine down only) with the light source being fully shielded (with cutoff shields) so that little to no light or glare spills onto abutting properties. Any exterior lighting that is required for security purposes may be illuminated by photocells and is not required to be extinguished at the close of business. All site and building lighting for commercial purposes, beyond what is needed for security purposes, shall be programmed to shut off at the close of business each day.
- 6) **Trash Removal:** All trash collection and disposal are the responsibility of the owner / property manager. The Applicant shall ensure daily that exterior areas of the site remain clear of debris, trash and any equipment used in connection with any commercial activities on site.

**Plan Changes after Approval by the Commission:**

Contemplated future changes to the plan approved herein shall be presented to the Community Development Director and the Building Inspector, or other relevant Town staff, for review prior to implementation of proposed changes.

**10.5.13.1 Minor Plan Changes:** After Plan Approval, an Applicant may apply to make minor changes in a Development Project involving minor utility or building orientation adjustments, or minor adjustments to parking or other site details that do not affect the overall build out or building envelope of the site, or provision of open space, number of housing units, or housing need or affordability features. Such minor changes must be submitted to the Commission on redlined prints of the approved plan, reflecting the proposed change, and on application forms provided by the Commission. The Commission may authorize such changes at any regularly scheduled meeting, without the need to hold a public hearing. The Commission shall set forth any decision to approve or deny such minor change by motion and written decision, and provide a copy to the Applicant for filing with the Town Clerk.

**10.5.13.2 Major Plan Changes:** Those changes deemed by the Commission to constitute a major change in a Development Project because of the nature of the change in relation to the prior approved plan, or because such change cannot be appropriately characterized as a minor change as described above, shall be processed by the Commission as a new application for Plan Approval pursuant to Section 10.5.

**Appeal:**

Any person aggrieved by this Decision of the CPDC may appeal to the appropriate court in accordance with the provisions of M.G.L. Ch. 40A Section 17, pursuant to M.G.L. Ch. 40R Section 11, within twenty (20) days after the date of filing of this Decision with the Town Clerk. Notice of any appeal with a copy of the complaint must also be filed with the Town Clerk within such twenty (20) days as provided in M.G.L. Ch. 40A Section 17.

This Decision and the relief, terms, restrictions and conditions contained herein shall run with the land and all subsequent owners shall benefit from and be bound by the relief, terms, restrictions and conditions contained herein.

*Signed as to the accuracy of the vote as reflected in the minutes:*

---

Andrew MacNichol, Community Development Director  
*Cc: Applicant, Town Clerk, DRT Staff, planning file*

Date

# ***DRAINAGE MEMORANDUM***

*For*

***Chase Bank***

***431 Main Street  
Town of Reading, Massachusetts  
Middlesex County***

Prepared by:

BOHLER  
352 Turnpike Road  
Southborough, MA 01772  
(508) 480-9900 TEL.



Joshua G. Swerling, P.E.  
Massachusetts P.E. Lic. # 41697

# **BOHLER //**

February 3, 2023

#MAA220275



## TABLE OF CONTENTS

|   |   |
|---|---|
| I. SUMMARY .....  | 1 |
| II. RATIONAL DRAINAGE CALCULATIONS .....  | 2 |
| III. STORMWATER MANAGEMENT STANDARDS .....  | 3 |
| Standard #1: No New Untreated Discharges .....  | 3 |
| Standard #2: Peak Rate Attenuation .....  | 3 |
| Standard #3: Recharge .....   | 3 |
| Standard #4: Water Quality .....  | 3 |
| Standard #5: Land Use with Higher Potential Pollutant Loads .....                                 | 3 |
| Standard #6: Critical Areas .....   | 3 |
| Standard #7: Redevelopment .....  | 3 |
| Standard #8: Construction Period Pollution Prevention and Erosion and Sedimentation Control ..... | 4 |
| Standard #9: Operation and Maintenance Plan (O&M Plan) .....                                      | 4 |
| Standard #10: Prohibition of Illicit Discharges .....   | 4 |

## APPENDICIES

APPENDIX A: MASSACHUSETTS STORMWATER MANAGEMENT CHECKLIST

APPENDIX B: PROJECT LOCATION MAPS

- USGS MAP
- FEMA FIRMETTE

APPENDIX C: SOIL INFORMATION

- SOIL TESTING RESULTS

APPENDIX D: RAINFALL DATA

- INTENSITY-DURATION-FREQUENCY CURVE

APPENDIX E: OPERATION AND MAINTENANCE

- STORMWATER OPERATION AND MAINTENANCE PLAN
- INSPECTION REPORT
- INSPECTION AND MAINTENANCE LOG FORM
- LONG-TERM POLLUTION PREVENTION PLAN
- ILLICIT DISCHARGE STATEMENT
- SPILL PREVENTION

## I. SUMMARY

This report examines the changes in drainage that can be expected as the result of the redevelopment consisting of a bank 431 Main Street in the Town of Reading, Massachusetts. The site, which contains approximately 0.37 acres of land, contains an existing building, paved parking lot, and gas pumps. The existing adjacent lot located at 167 Washington Street will be included in the development of the bank, but no portion of site work proposed for the bank will be located on this lot. This lot is approximately 0.22 acres and is a mix of asphalt pavement and grass.

The proposed project includes the construction of a new bank building with parking areas, landscaping, utilities, and stormwater management components. The project also includes construction of new landscaped areas. This report addresses a comparative analysis of the pre- and post-development site runoff conditions using the Rational Method. The project will also provide erosion and sedimentation controls during the demolition and construction periods, as well as long term stabilization of the site.

The entirety of the proposed project area flows to three (3) proposed catch basins within the site that will convey stormwater to an existing catch basin located on the sideline of Main Street. The existing drainage ties into this catch-basin and the proposed project will connect to the same location. As a result of this redevelopment, a decrease in peak flows is expected to this discharge point as a result of the decrease of approximately 3,445 SF of impervious surfaces. The adjacent parcel located within the Residential Zone District does not contain any stormwater management. The parcel is comprised of debris piles, parked vehicles and broken asphalt areas. Under the proposed condition, all debris, vehicles and paved areas will be removed. Existing trees will remain the lot will be loamed and seeded. With the removal of the existing asphalt on the property as well as the new landscaping that there will be a decrease in stormwater runoff associated with this parcel.

The proposed site conditions will improve water quality through the decrease in impervious area. Implementation of stormwater Best Management Practices will comply with Massachusetts DEP standards. Stormwater management will meet all redevelopment requirements of the current Massachusetts Department of Environmental Protection Stormwater Policy Handbook and the Town of Reading's requirements for stormwater drainage. The proposed drainage condition will maintain the existing drainage patterns.



## II. RATIONAL DRAINAGE CALCULATIONS

### Rational Method Drainage Calculations

#### EXISTING CONDITIONS

| <u>Coverage type</u> | <u>acres</u> | <u>pct.</u> | <u>"C"</u> | <u>frac.</u>         |
|----------------------|--------------|-------------|------------|----------------------|
| Impervious           | 0.37         | 1.00        | 0.95       | 0.95                 |
| Landscape / Grass    | 0            | 0.00        | 0.30       | 0                    |
| Total                | 0.37         |             |            | 0.95 (Composite "C") |

#### PROPOSED CONDITIONS

| <u>Coverage type</u> | <u>acres</u> | <u>pct.</u> | <u>"C"</u> | <u>frac.</u>         |
|----------------------|--------------|-------------|------------|----------------------|
| Impervious           | 0.29         | 0.78        | 0.95       | 0.74                 |
| Landscape / Grass    | 0.08         | 0.22        | 0.30       | 0.06                 |
| Total                | 0.37         |             |            | 0.81 (Composite "C") |

Time of Concentration 5 MIN

| <u>IDF Chart</u> | <u>"I"</u> |
|------------------|------------|
| 2-yr storm       | 3.3        |
| 10-yr storm      | 5.2        |
| 50-yr storm      | 7.2        |
| 100-yr storm     | 8.2        |

#### RUNOFF CALCULATIONS "Q" = C x I x A

| <u>Existing Conditions</u> | C    | I   | A    | Q        |
|----------------------------|------|-----|------|----------|
| 2-yr storm                 | 0.95 | 3.3 | 0.37 | 1.16 cfs |
| 10-yr storm                | 0.95 | 5.2 | 0.37 | 1.83 cfs |
| 50-yr storm                | 0.95 | 7.2 | 0.37 | 2.53 cfs |
| 100-yr storm               | 0.95 | 8.2 | 0.37 | 2.90 cfs |

| <u>Proposed Conditions</u> | C    | I   | A    | Q        |
|----------------------------|------|-----|------|----------|
| 2-yr storm                 | 0.81 | 3.3 | 0.37 | 0.99 cfs |
| 10-yr storm                | 0.81 | 5.2 | 0.37 | 1.56 cfs |
| 50-yr storm                | 0.81 | 7.2 | 0.37 | 2.16 cfs |
| 100-yr storm               | 0.81 | 8.2 | 0.37 | 2.47 cfs |

#### Difference (Existing vs. Proposed)

|              |           |      |
|--------------|-----------|------|
| 2-yr storm   | -0.17 cfs | -15% |
| 10-yr storm  | -0.27 cfs | -15% |
| 50-yr storm  | -0.37 cfs | -15% |
| 100-yr storm | -0.43 cfs | -15% |

---

### III. STORMWATER MANAGEMENT STANDARDS

#### **Standard #1: No New Untreated Discharges**

The project has been designed to maintain the existing drainage patterns and will decrease peak rates as a result of a decrease in impervious area.

#### **Standard #2: Peak Rate Attenuation**

As outlined in **Section II**, the development of the site has been designed so that post-development peak rates of runoff as well as volume are below pre-development conditions for the 2-, 10-, 50-, and 100-year storm events.

#### **Standard #3: Recharge**

The project is a redevelopment and results in a significant decrease of impervious area. Thus, no recharge is required. However, on-site recharge will be increased due to the increase in pervious landscaped area.

#### **Standard #4: Water Quality**

The project is a redevelopment and results in a decrease of impervious area. Thus, no water quality is required. However, water quality will be increased due to the increase in pervious landscaped areas along with the additional deep-sump hooded catch-basins.

#### **Standard #5: Land Use with Higher Potential Pollutant Loads**

Not Applicable for this project.

#### **Standard #6: Critical Areas**

Not Applicable for this project.

#### **Standard #7: Redevelopment**

The site is considered a redevelopment and results in a decrease of approximately 3,445 SF of impervious area.

### **Standard #8: Construction Period Pollution Prevention and Erosion and Sedimentation Control**

The proposed project will provide construction period erosion and sedimentation controls as indicated within the site plan set provided for this project. This includes a proposed construction exit, protection for stormwater inlets, protection around temporary material stock piles and various other techniques as outlined on the erosion and sediment control sheets.

### **Standard #9: Operation and Maintenance Plan (O&M Plan)**

An Operation and Maintenance (O&M) Plan for this site has been prepared and is included in **Appendix E** of this report. The O&M Plan outlines procedures and time tables for the long term operation and maintenance of the proposed site stormwater management system, including initial inspections upon completion of construction and periodic monitoring of the system components, in accordance with established practices and the manufacturer's recommendations. The O&M Plan includes a list of responsible parties.

### **Standard #10: Prohibition of Illicit Discharges**

The proposed stormwater system will only convey allowable non-stormwater discharges (firefighting waters, irrigation, air conditioning condensation, etc.) and will not contain any illicit discharges from prohibited sources.

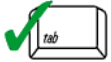




# Checklist for Stormwater Report

## A. Introduction

**Important:** When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A Stormwater Report must be submitted with the Notice of Intent permit application to document compliance with the Stormwater Management Standards. The following checklist is NOT a substitute for the Stormwater Report (which should provide more substantive and detailed information) but is offered here as a tool to help the applicant organize their Stormwater Management documentation for their Report and for the reviewer to assess this information in a consistent format. As noted in the Checklist, the Stormwater Report must contain the engineering computations and supporting information set forth in Volume 3 of the [Massachusetts Stormwater Handbook](#). The Stormwater Report must be prepared and certified by a Registered Professional Engineer (RPE) licensed in the Commonwealth.

The Stormwater Report must include:

- The Stormwater Checklist completed and stamped by a Registered Professional Engineer (see page 2) that certifies that the Stormwater Report contains all required submittals.<sup>1</sup> This Checklist is to be used as the cover for the completed Stormwater Report.
- Applicant/Project Name
- Project Address
- Name of Firm and Registered Professional Engineer that prepared the Report
- Long-Term Pollution Prevention Plan required by Standards 4-6
- Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan required by Standard 8<sup>2</sup>
- Operation and Maintenance Plan required by Standard 9

In addition to all plans and supporting information, the Stormwater Report must include a brief narrative describing stormwater management practices, including environmentally sensitive site design and LID techniques, along with a diagram depicting runoff through the proposed BMP treatment train. Plans are required to show existing and proposed conditions, identify all wetland resource areas, NRCS soil types, critical areas, Land Uses with Higher Potential Pollutant Loads (LUHPPL), and any areas on the site where infiltration rate is greater than 2.4 inches per hour. The Plans shall identify the drainage areas for both existing and proposed conditions at a scale that enables verification of supporting calculations.

As noted in the Checklist, the Stormwater Management Report shall document compliance with each of the Stormwater Management Standards as provided in the Massachusetts Stormwater Handbook. The soils evaluation and calculations shall be done using the methodologies set forth in Volume 3 of the Massachusetts Stormwater Handbook.

To ensure that the Stormwater Report is complete, applicants are required to fill in the Stormwater Report Checklist by checking the box to indicate that the specified information has been included in the Stormwater Report. If any of the information specified in the checklist has not been submitted, the applicant must provide an explanation. The completed Stormwater Report Checklist and Certification must be submitted with the Stormwater Report.

<sup>1</sup> The Stormwater Report may also include the Illicit Discharge Compliance Statement required by Standard 10. If not included in the Stormwater Report, the Illicit Discharge Compliance Statement must be submitted prior to the discharge of stormwater runoff to the post-construction best management practices.

<sup>2</sup> For some complex projects, it may not be possible to include the Construction Period Erosion and Sedimentation Control Plan in the Stormwater Report. In that event, the issuing authority has the discretion to issue an Order of Conditions that approves the project and includes a condition requiring the proponent to submit the Construction Period Erosion and Sedimentation Control Plan before commencing any land disturbance activity on the site.



# Checklist for Stormwater Report

---

## B. Stormwater Checklist and Certification

The following checklist is intended to serve as a guide for applicants as to the elements that ordinarily need to be addressed in a complete Stormwater Report. The checklist is also intended to provide conservation commissions and other reviewing authorities with a summary of the components necessary for a comprehensive Stormwater Report that addresses the ten Stormwater Standards.

*Note:* Because stormwater requirements vary from project to project, it is possible that a complete Stormwater Report may not include information on some of the subjects specified in the Checklist. If it is determined that a specific item does not apply to the project under review, please note that the item is not applicable (N.A.) and provide the reasons for that determination.

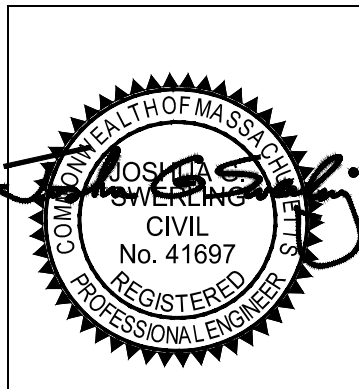
A complete checklist must include the Certification set forth below signed by the Registered Professional Engineer who prepared the Stormwater Report.

---

### Registered Professional Engineer's Certification

I have reviewed the Stormwater Report, including the soil evaluation, computations, Long-term Pollution Prevention Plan, the Construction Period Erosion and Sedimentation Control Plan (if included), the Long-term Post-Construction Operation and Maintenance Plan, the Illicit Discharge Compliance Statement (if included) and the plans showing the stormwater management system, and have determined that they have been prepared in accordance with the requirements of the Stormwater Management Standards as further elaborated by the Massachusetts Stormwater Handbook. I have also determined that the information presented in the Stormwater Checklist is accurate and that the information presented in the Stormwater Report accurately reflects conditions at the site as of the date of this permit application.

Registered Professional Engineer Block and Signature



*Joshua G. Swerling*  
Signature and Date

February 3, 2023

---

## Checklist

**Project Type:** Is the application for new development, redevelopment, or a mix of new and redevelopment?

- New development
- Redevelopment
- Mix of New Development and Redevelopment



# Checklist for Stormwater Report

---

## Checklist (continued)

**LID Measures:** Stormwater Standards require LID measures to be considered. Document what environmentally sensitive design and LID Techniques were considered during the planning and design of the project:

- No disturbance to any Wetland Resource Areas
- Site Design Practices (e.g. clustered development, reduced frontage setbacks)
- Reduced Impervious Area (Redevelopment Only)
- Minimizing disturbance to existing trees and shrubs
- LID Site Design Credit Requested:
  - Credit 1
  - Credit 2
  - Credit 3
- Use of “country drainage” versus curb and gutter conveyance and pipe
- Bioretention Cells (includes Rain Gardens)
- Constructed Stormwater Wetlands (includes Gravel Wetlands designs)
- Treebox Filter
- Water Quality Swale
- Grass Channel
- Green Roof
- Other (describe): \_\_\_\_\_

### Standard 1: No New Untreated Discharges

- No new untreated discharges
- Outlets have been designed so there is no erosion or scour to wetlands and waters of the Commonwealth
- Supporting calculations specified in Volume 3 of the Massachusetts Stormwater Handbook included.





# Checklist for Stormwater Report

---

## Checklist (continued)

### Standard 2: Peak Rate Attenuation

- Standard 2 waiver requested because the project is located in land subject to coastal storm flowage and stormwater discharge is to a wetland subject to coastal flooding.
- Evaluation provided to determine whether off-site flooding increases during the 100-year 24-hour storm.
- Calculations provided to show that post-development peak discharge rates do not exceed pre-development rates for the 2-year and 10-year 24-hour storms. If evaluation shows that off-site flooding increases during the 100-year 24-hour storm, calculations are also provided to show that post-development peak discharge rates do not exceed pre-development rates for the 100-year 24-hour storm.

### Standard 3: Recharge

- Soil Analysis provided.
- Required Recharge Volume calculation provided.
- Required Recharge volume reduced through use of the LID site Design Credits.
- Sizing the infiltration, BMPs is based on the following method: Check the method used.
  - Static
  - Simple Dynamic
  - Dynamic Field<sup>1</sup>
- Runoff from all impervious areas at the site discharging to the infiltration BMP.
- Runoff from all impervious areas at the site is *not* discharging to the infiltration BMP and calculations are provided showing that the drainage area contributing runoff to the infiltration BMPs is sufficient to generate the required recharge volume.
- Recharge BMPs have been sized to infiltrate the Required Recharge Volume.
- Recharge BMPs have been sized to infiltrate the Required Recharge Volume *only* to the maximum extent practicable for the following reason:
  - Site is comprised solely of C and D soils and/or bedrock at the land surface
  - M.G.L. c. 21E sites pursuant to 310 CMR 40.0000
  - Solid Waste Landfill pursuant to 310 CMR 19.000
  - Project is otherwise subject to Stormwater Management Standards only to the maximum extent practicable.
- Calculations showing that the infiltration BMPs will drain in 72 hours are provided.
- Property includes a M.G.L. c. 21E site or a solid waste landfill and a mounding analysis is included.

---

<sup>1</sup> 80% TSS removal is required prior to discharge to infiltration BMP if Dynamic Field method is used.



# Checklist for Stormwater Report

---

## Checklist (continued)

### Standard 3: Recharge (continued)

- The infiltration BMP is used to attenuate peak flows during storms greater than or equal to the 10-year 24-hour storm and separation to seasonal high groundwater is less than 4 feet and a mounding analysis is provided.
- Documentation is provided showing that infiltration BMPs do not adversely impact nearby wetland resource areas.

### Standard 4: Water Quality

The Long-Term Pollution Prevention Plan typically includes the following:

- Good housekeeping practices;
  - Provisions for storing materials and waste products inside or under cover;
  - Vehicle washing controls;
  - Requirements for routine inspections and maintenance of stormwater BMPs;
  - Spill prevention and response plans;
  - Provisions for maintenance of lawns, gardens, and other landscaped areas;
  - Requirements for storage and use of fertilizers, herbicides, and pesticides;
  - Pet waste management provisions;
  - Provisions for operation and management of septic systems;
  - Provisions for solid waste management;
  - Snow disposal and plowing plans relative to Wetland Resource Areas;
  - Winter Road Salt and/or Sand Use and Storage restrictions;
  - Street sweeping schedules;
  - Provisions for prevention of illicit discharges to the stormwater management system;
  - Documentation that Stormwater BMPs are designed to provide for shutdown and containment in the event of a spill or discharges to or near critical areas or from LUHPPL;
  - Training for staff or personnel involved with implementing Long-Term Pollution Prevention Plan;
  - List of Emergency contacts for implementing Long-Term Pollution Prevention Plan.
- A Long-Term Pollution Prevention Plan is attached to Stormwater Report and is included as an attachment to the Wetlands Notice of Intent.
  - Treatment BMPs subject to the 44% TSS removal pretreatment requirement and the one inch rule for calculating the water quality volume are included, and discharge:
    - is within the Zone II or Interim Wellhead Protection Area
    - is near or to other critical areas
    - is within soils with a rapid infiltration rate (greater than 2.4 inches per hour)
    - involves runoff from land uses with higher potential pollutant loads.
  - The Required Water Quality Volume is reduced through use of the LID site Design Credits.
  - Calculations documenting that the treatment train meets the 80% TSS removal requirement and, if applicable, the 44% TSS removal pretreatment requirement, are provided.



# Checklist for Stormwater Report

---

## Checklist (continued)

### Standard 4: Water Quality (continued)

- The BMP is sized (and calculations provided) based on:
  - The ½" or 1" Water Quality Volume or
  - The equivalent flow rate associated with the Water Quality Volume and documentation is provided showing that the BMP treats the required water quality volume.
- The applicant proposes to use proprietary BMPs, and documentation supporting use of proprietary BMP and proposed TSS removal rate is provided. This documentation may be in the form of the propriety BMP checklist found in Volume 2, Chapter 4 of the Massachusetts Stormwater Handbook and submitting copies of the TARP Report, STEP Report, and/or other third party studies verifying performance of the proprietary BMPs.
- A TMDL exists that indicates a need to reduce pollutants other than TSS and documentation showing that the BMPs selected are consistent with the TMDL is provided.

### Standard 5: Land Uses With Higher Potential Pollutant Loads (LUHPPLs)

- The NPDES Multi-Sector General Permit covers the land use and the Stormwater Pollution Prevention Plan (SWPPP) has been included with the Stormwater Report.
- The NPDES Multi-Sector General Permit covers the land use and the SWPPP will be submitted **prior to** the discharge of stormwater to the post-construction stormwater BMPs.
- The NPDES Multi-Sector General Permit does **not** cover the land use.
- LUHPPLs are located at the site and industry specific source control and pollution prevention measures have been proposed to reduce or eliminate the exposure of LUHPPLs to rain, snow, snow melt and runoff, and been included in the long term Pollution Prevention Plan.
- All exposure has been eliminated.
- All exposure has **not** been eliminated and all BMPs selected are on MassDEP LUHPPL list.
- The LUHPPL has the potential to generate runoff with moderate to higher concentrations of oil and grease (e.g. all parking lots with >1000 vehicle trips per day) and the treatment train includes an oil grit separator, a filtering bioretention area, a sand filter or equivalent.

### Standard 6: Critical Areas

- The discharge is near or to a critical area and the treatment train includes only BMPs that MassDEP has approved for stormwater discharges to or near that particular class of critical area.
- Critical areas and BMPs are identified in the Stormwater Report.





# Checklist for Stormwater Report

## Checklist (continued)

### Standard 7: Redevelopments and Other Projects Subject to the Standards only to the maximum extent practicable

- The project is subject to the Stormwater Management Standards only to the maximum Extent Practicable as a:
- Limited Project
  - Small Residential Projects: 5-9 single family houses or 5-9 units in a multi-family development provided there is no discharge that may potentially affect a critical area.
  - Small Residential Projects: 2-4 single family houses or 2-4 units in a multi-family development with a discharge to a critical area
  - Marina and/or boatyard provided the hull painting, service and maintenance areas are protected from exposure to rain, snow, snow melt and runoff
  - Bike Path and/or Foot Path
  - Redevelopment Project
  - Redevelopment portion of mix of new and redevelopment.
- Certain standards are not fully met (Standard No. 1, 8, 9, and 10 must always be fully met) and an explanation of why these standards are not met is contained in the Stormwater Report.
- The project involves redevelopment and a description of all measures that have been taken to improve existing conditions is provided in the Stormwater Report. The redevelopment checklist found in Volume 2 Chapter 3 of the Massachusetts Stormwater Handbook may be used to document that the proposed stormwater management system (a) complies with Standards 2, 3 and the pretreatment and structural BMP requirements of Standards 4-6 to the maximum extent practicable and (b) improves existing conditions.

### Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control

A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan must include the following information:

- Narrative;
  - Construction Period Operation and Maintenance Plan;
  - Names of Persons or Entity Responsible for Plan Compliance;
  - Construction Period Pollution Prevention Measures;
  - Erosion and Sedimentation Control Plan Drawings;
  - Detail drawings and specifications for erosion control BMPs, including sizing calculations;
  - Vegetation Planning;
  - Site Development Plan;
  - Construction Sequencing Plan;
  - Sequencing of Erosion and Sedimentation Controls;
  - Operation and Maintenance of Erosion and Sedimentation Controls;
  - Inspection Schedule;
  - Maintenance Schedule;
  - Inspection and Maintenance Log Form.
- A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan containing the information set forth above has been included in the Stormwater Report.



# Checklist for Stormwater Report

---

## Checklist (continued)

### Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control (continued)

- The project is highly complex and information is included in the Stormwater Report that explains why it is not possible to submit the Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan with the application. A Construction Period Pollution Prevention and Erosion and Sedimentation Control has **not** been included in the Stormwater Report but will be submitted **before** land disturbance begins.
- The project is **not** covered by a NPDES Construction General Permit.
- The project is covered by a NPDES Construction General Permit and a copy of the SWPPP is in the Stormwater Report.
- The project is covered by a NPDES Construction General Permit but no SWPPP been submitted. The SWPPP will be submitted BEFORE land disturbance begins.

### Standard 9: Operation and Maintenance Plan

- The Post Construction Operation and Maintenance Plan is included in the Stormwater Report and includes the following information:
  - Name of the stormwater management system owners;
  - Party responsible for operation and maintenance;
  - Schedule for implementation of routine and non-routine maintenance tasks;
  - Plan showing the location of all stormwater BMPs maintenance access areas;
  - Description and delineation of public safety features;
  - Estimated operation and maintenance budget; and
  - Operation and Maintenance Log Form.
- The responsible party is **not** the owner of the parcel where the BMP is located and the Stormwater Report includes the following submissions:
  - A copy of the legal instrument (deed, homeowner's association, utility trust or other legal entity) that establishes the terms of and legal responsibility for the operation and maintenance of the project site stormwater BMPs;
  - A plan and easement deed that allows site access for the legal entity to operate and maintain BMP functions.

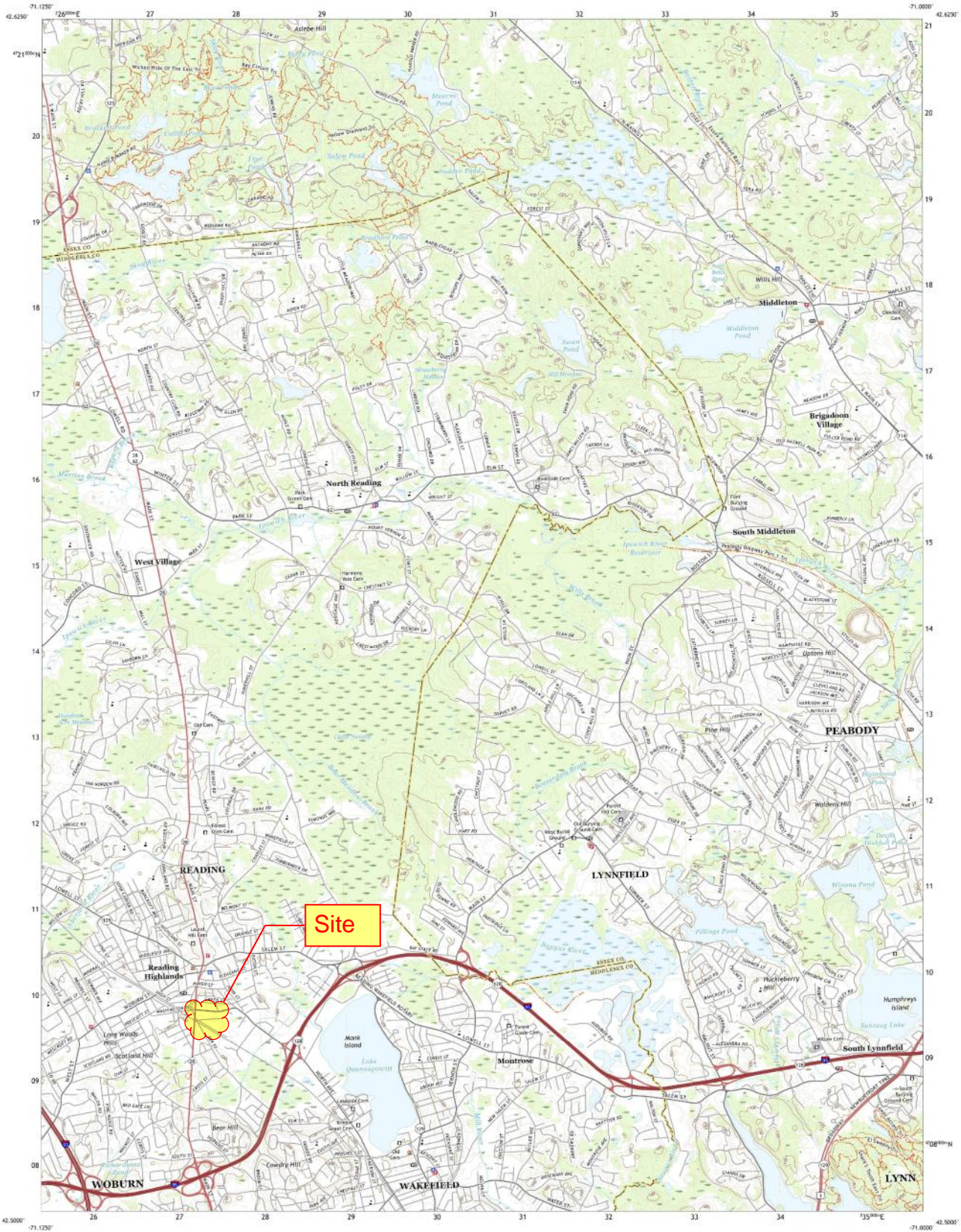
### Standard 10: Prohibition of Illicit Discharges

- The Long-Term Pollution Prevention Plan includes measures to prevent illicit discharges;
- An Illicit Discharge Compliance Statement is attached;
- NO Illicit Discharge Compliance Statement is attached but will be submitted **prior to** the discharge of any stormwater to post-construction BMPs.

## **APPENDIX B: PROJECT LOCATION MAPS**

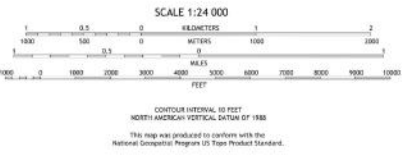
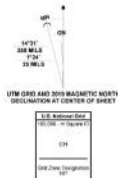
- USGS MAP
- FEMA FIRMETTE





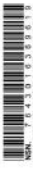
Produced by the United States Geological Survey  
North American Datum of 1983 (NAD83)  
World Geodetic System of 1984 (WGS84). Projection and  
1:250,000 scale horizontal datum: North American Datum of 1983  
This map is not a legal document. Boundaries may be  
generalized for this map scale. Private lands with government  
easements may not be shown. Obtain permission before  
entering private lands.

Inventory: NAD83, July 2016 - September 2016  
Base: U.S. Census Bureau, 2014  
Hydrography: National Hydrography Data, 1974-2018  
Boundaries: National Planning Database, 2008-2010  
Contours: Multiple sources; see metadata for 2016-2017  
Waterbodies: FWS National Wetlands Inventory 1986 - 2011



|    |    |    |                    |
|----|----|----|--------------------|
| 1  | 2  | 3  | 1 Lawrence         |
| 4  | 5  | 6  | 2 South Greenfield |
| 7  | 8  | 9  | 3 Greenfield       |
| 10 | 11 | 12 | 4 Springfield      |
| 13 | 14 | 15 | 5 Salem            |
| 16 | 17 | 18 | 6 Longfellow       |
| 19 | 20 | 21 | 7 Boston Heights   |
| 22 | 23 | 24 | 8 Lynn             |

READING QUADRANGLE

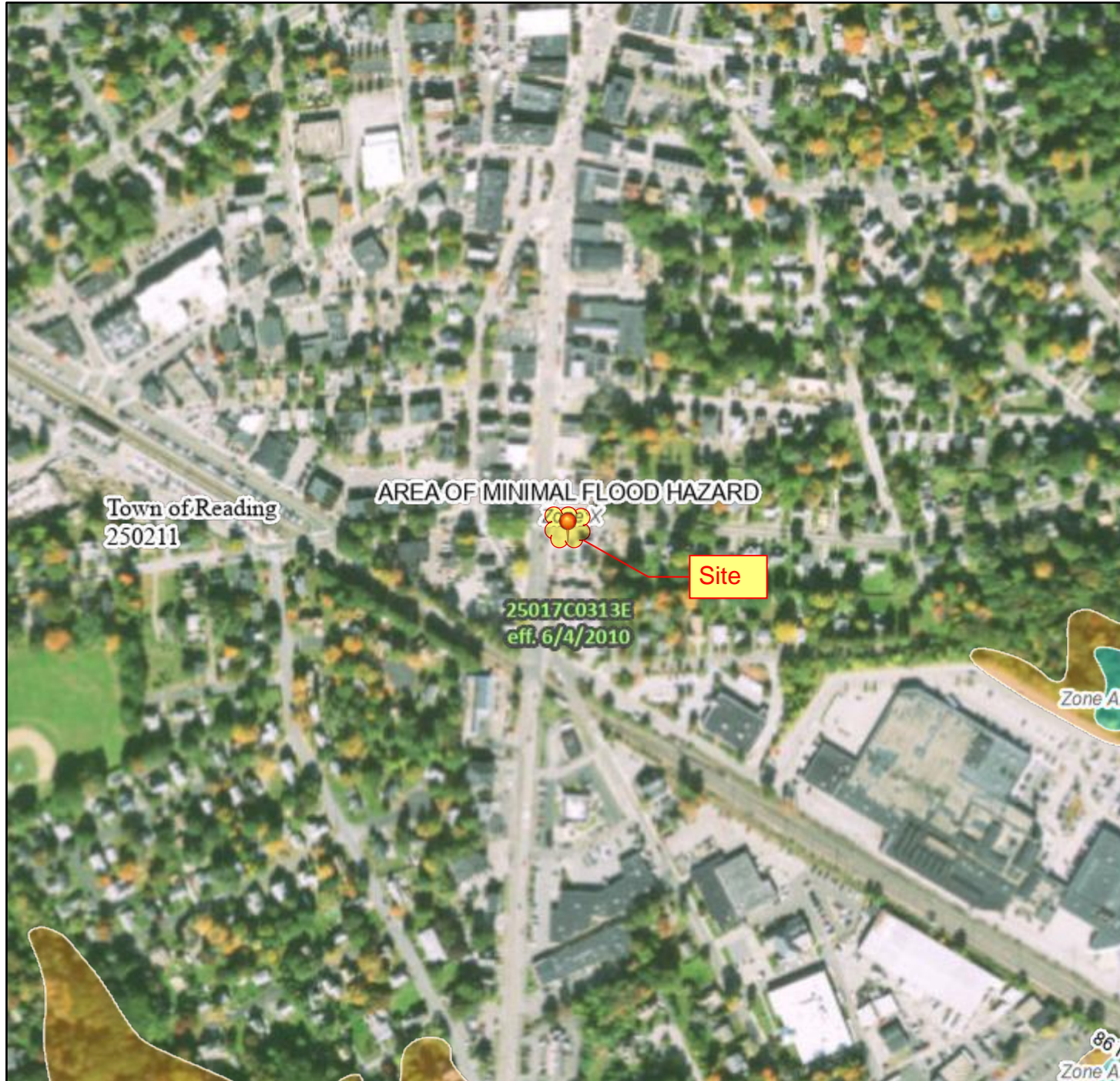




# National Flood Hazard Layer FIRMMette



71°6'29"W 42°31'29"N



## Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

|                             |  |  |
|-----------------------------|--|--|
| SPECIAL FLOOD HAZARD AREAS  |  | Without Base Flood Elevation (BFE)<br><i>Zone A, V, A99</i>  |
|                             |  | With BFE or Depth <i>Zone AE, AO, AH, VE, AR</i>   |
|                             |  | Regulatory Floodway  |
| OTHER AREAS OF FLOOD HAZARD |  | 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile <i>Zone X</i> |
|                             |  | Future Conditions 1% Annual Chance Flood Hazard <i>Zone X</i>  |
|                             |  | Area with Reduced Flood Risk due to Levee. See Notes. <i>Zone X</i>  |
|                             |  | Area with Flood Risk due to Levee <i>Zone D</i>  |
| OTHER AREAS                 |  | NO SCREEN Area of Minimal Flood Hazard <i>Zone X</i>   |
|                             |  | Effective LOMRs  |
| GENERAL STRUCTURES          |  | Area of Undetermined Flood Hazard <i>Zone D</i>  |
|                             |  | Channel, Culvert, or Storm Sewer   |
| OTHER FEATURES              |  | Levee, Dike, or Floodwall  |
|                             |  | Cross Sections with 1% Annual Chance Water Surface Elevation   |
| MAP PANELS                  |  | Coastal Transect   |
|                             |  | Base Flood Elevation Line (BFE)  |
| OTHER FEATURES              |  | Limit of Study   |
|                             |  | Jurisdiction Boundary  |
| OTHER FEATURES              |  | Coastal Transect Baseline  |
|                             |  | Profile Baseline   |
| OTHER FEATURES              |  | Hydrographic Feature   |
|                             |  | Digital Data Available   |
| OTHER FEATURES              |  | No Digital Data Available  |
|                             |  | Unmapped   |
| OTHER FEATURES              |  | The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.                                     |
|                             |  |  |

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on **1/5/2023 at 11:44 AM** and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.



Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

71°5'52"W 42°31'12"N

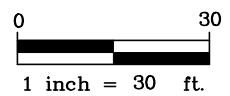
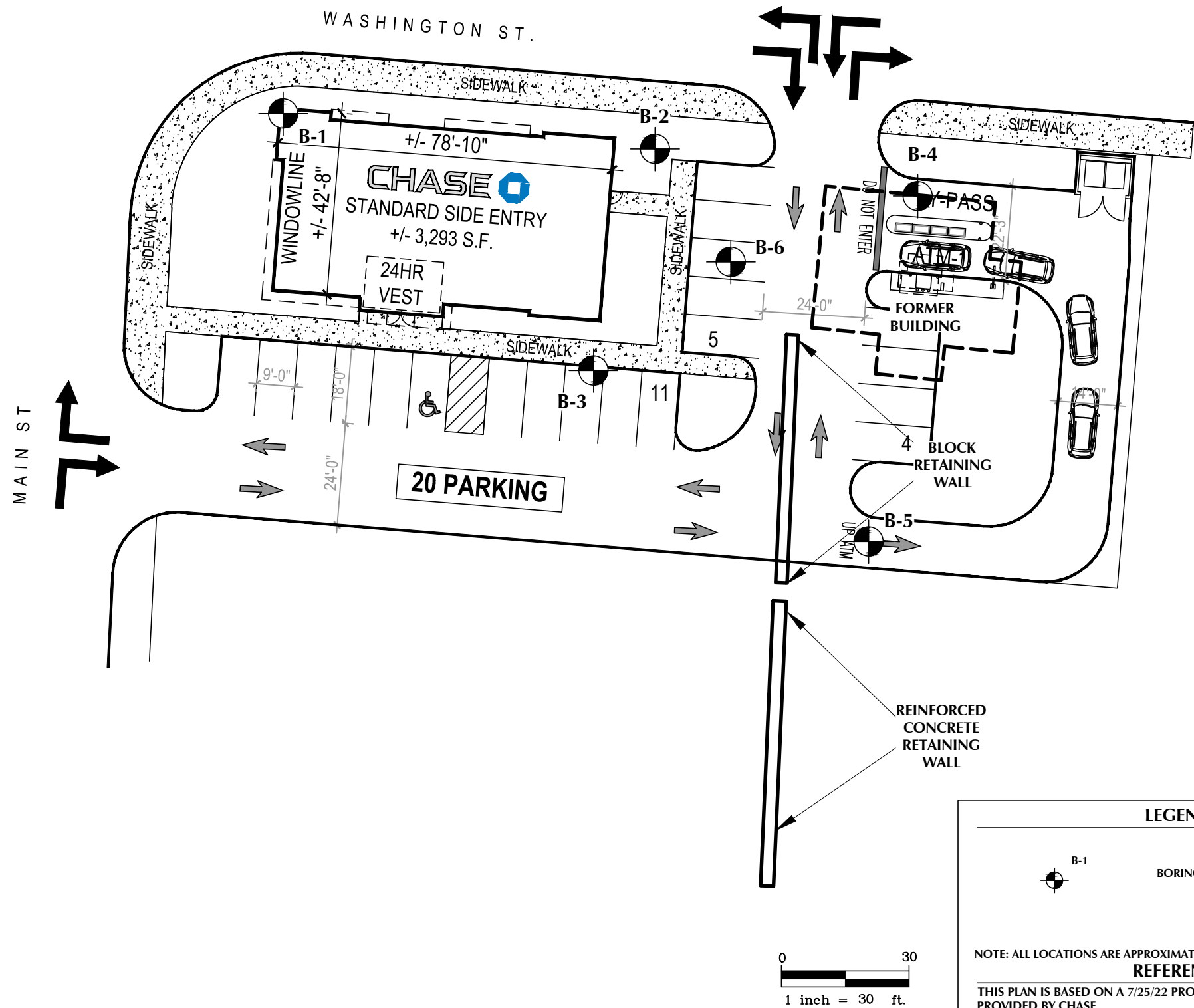
## **APPENDIX C: SOIL INFORMATION**

### ➤ *SOIL TESTING RESULTS*




**FIGURE 1**  
**Boring Location Plan**

N:\JOB FOLDERS\2022\219395\GM\DRAWINGS AND PLANS\CAD\GM2219395.000.DWG



**LEGEND**


B-1
BORING LOCATION

NOTE: ALL LOCATIONS ARE APPROXIMATE.  
**REFERENCE**

THIS PLAN IS BASED ON A 7/25/22 PROPOSED SITE PLAN PROVIDED BY CHASE.



# WHITESTONE

An Employee-Owned Company

352 TURNPIKE ROAD, SUITE 320, SOUTHBOROUGH, MA 01772  
508.485.0755 WHITESTONEASSOC.COM

|  |                          |
|--|--------------------------|
| <b>DRAWING TITLE:</b><br>BORING LOCATION PLAN  |                          |
| <b>CLIENT:</b><br>BOHLER ENGINEERING MA, LLC   |                          |
| <b>PROJECT:</b><br>PROPOSED CHASE BANK BRANCH<br>431 MAIN STREET<br>MAP 17, LOT 63<br>READING, MIDDLESEX COUNTY, MASSACHUSETTS |                          |
| <b>PROJECT #:</b><br>GM2219395.000   |                          |
| <b>DESIGNED BY:</b><br>MR  | <b>PROJ. MGR.:</b><br>RR |
| <b>DATE:</b><br>8/31/22  | <b>FIGURE:</b><br>1      |
| <b>SCALE:</b><br>1" = 30'  |                          |

**APPENDIX A**  
**Records of Subsurface Exploration**



# RECORD OF SUBSURFACE EXPLORATION

|  |                                  |  |  |
|--|----------------------------------|--|--|
| <b>Project:</b> Proposed Chase Bank Branch                                 |                                  | <b>WAI Project No.:</b> GM2219395.000                      |  |
| <b>Location:</b> 431 Main Street, Reading, Middlesex County, Massachusetts |                                  | <b>Client:</b> Bohler Engineering MA, LLC                  |  |
| <b>Surface Elevation:</b> ± NS feet above NAVD88                           | <b>Date Started:</b> 8/17/2022   | <b>Water Depth   Elevation</b><br>(feet bgs)   (ft NAVD88) | <b>Cave-In Depth   Elevation</b><br>(feet bgs)   (ft NAVD88) |
| <b>Termination Depth:</b> 5.0 feet bgs                                     | <b>Date Completed:</b> 8/17/2022 | <b>During:</b> --   -- ▾                                   | <b>At Completion:</b> --   -- ▾                              |
| <b>Proposed Location:</b> Building   | <b>Logged By:</b> RK             | <b>24 Hours:</b> --   -- ▾                                 | <b>At Completion:</b> --   -- ▾                              |
| <b>Drill / Test Method:</b> HSA / SPT                                      | <b>Contractor:</b> GS            | <b>24 Hours:</b> --   -- ▾                                 | <b>24 Hours:</b> --   -- ▾                                   |
|  | <b>Equipment:</b> CME 85         |  |  |

| SAMPLE INFORMATION |     |              |               |               |   | DEPTH  | STRATA        | DESCRIPTION OF MATERIALS<br>(Classification) | REMARKS  |
|--------------------|-----|--------------|---------------|---------------|---|--------|---------------|--|--|
| Depth<br>(feet)    | No  | Type         | Blows Per 6"  | Rec.<br>(in.) | N | (feet) |               |  |  |
|                    |     |              |               |               |   | 0.0    | PAVEMENT      | 3" Asphalt                                   |  |
|                    |     |              |               |               |   |        | GRAVEL        | 10" Granular Subbase                         |  |
| 1 - 3              | S-1 | <del>X</del> | 2 - 3 - 4 - 2 | 6             | 7 |        | EXISTING FILL | Brown, Loose, Pea Gravel and Sand (FILL)     |  |
| 3 - 5              | S-2 | <del>X</del> | 2 - 1 - 1 - 2 | 8             | 2 |        |               | As Above, Very Loose (FILL)                  |  |
|                    |     |              |               |               |   | 5.0    |               |  | Boring Log B-1 Terminated at Depth of 5 feet below ground surface. |
|                    |     |              |               |               |   | 10.0   |               |  |  |
|                    |     |              |               |               |   | 15.0   |               |  |  |
|                    |     |              |               |               |   | 20.0   |               |  |  |
|                    |     |              |               |               |   | 25.0   |               |  |  |

NOTES: bgs = below ground surface, msl = mean sea level, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched



# RECORD OF SUBSURFACE EXPLORATION

Boring No.: B-2

Page 1 of 1

|  |   |  |  |
|--|---|--|--|
| <b>Project:</b> Proposed Chase Bank Branch                                 |   | <b>WAI Project No.:</b> GM2219395.000                      |  |
| <b>Location:</b> 431 Main Street, Reading, Middlesex County, Massachusetts |   | <b>Client:</b> Bohler Engineering MA, LLC                  |  |
| <b>Surface Elevation:</b> ± <u>NS</u> feet above NAVD88                    | <b>Date Started:</b> <u>8/17/2022</u>   | <b>Water Depth   Elevation</b><br>(feet bgs)   (ft NAVD88) | <b>Cave-In Depth   Elevation</b><br>(feet bgs)   (ft NAVD88) |
| <b>Termination Depth:</b> <u>22.0</u> feet bgs                             | <b>Date Completed:</b> <u>8/17/2022</u> | <b>During:</b> <u>10.0</u>   --   ▼                        | <b>At Completion:</b> --   --   ▼                            |
| <b>Proposed Location:</b> <u>Building</u>                                  | <b>Logged By:</b> <u>RK</u>             | <b>At Completion:</b> --   --   ▼                          | <b>At Completion:</b> --   --   ▼                            |
| <b>Drill / Test Method:</b> <u>HSA / SPT</u>                               | <b>Contractor:</b> <u>GS</u>            | <b>24 Hours:</b> --   --   ▼                               | <b>24 Hours:</b> --   --   ▼                                 |
|  | <b>Equipment:</b> <u>CME 85</u>         |  |  |

| SAMPLE INFORMATION |     |      |                   |               |    | DEPTH  | STRATA             | DESCRIPTION OF MATERIALS<br>(Classification)                        | REMARKS |
|--------------------|-----|------|-------------------|---------------|----|--------|--------------------|---|---------|
| Depth<br>(feet)    | No  | Type | Blows Per 6"      | Rec.<br>(in.) | N  | (feet) |                    |   |         |
|                    |     |      |                   |               |    | 0.0    | PAVEMENT           | 4" Asphalt  |         |
|                    |     |      |                   |               |    |        | GRAVEL             | 8" Granular Subbase   |         |
| 1 - 3              | S-1 | X    | 6 - 3 - 2 - 1     | 14            | 5  |        | EXISTING FILL      | Dark Brown, Loose, Silty Sand with Gravel, Trace Organics (FILL)    |         |
| 3 - 5              | S-2 | X    | 2 - 2 - 5 - 6     | 12            | 7  |        |                    | As Above (FILL)   |         |
| 5 - 7              | S-3 | X    | 16 - 22 - 19 - 24 | 12            | 41 | 5.0    |                    | Gray, Dense, Poorly Graded Sand with Silt and Gravel (SP-SM)        |         |
| 7 - 9              | S-4 | X    | 12 - 19 - 26 - 48 | 14            | 45 |        |                    | As Above (SP-SM)  |         |
| 10 - 12            | S-5 | X    | 14 - 23 - 25 - 25 | 14            | 48 | 10.0   |                    | As Above, Gray-Brown (SP-SM)  |         |
|                    |     |      |                   |               |    |        | GLACIAL<br>OUTWASH |   |         |
| 15 - 17            | S-6 | X    | 2 - 7 - 9 - 14    | 16            | 16 | 15.0   |                    | As Above, Medium Dense (SP-SM)                                      |         |
| 17 - 19            | S-7 | X    | 5 - 5 - 5 - 13    | 14            | 10 |        |                    | As Above, Loose to Medium Dense (SP-SM)                             |         |
| 20 - 22            | S-8 | X    | 5 - 7 - 8 - 6     | 6             | 15 | 20.0   |                    | As Above, Brown, Medium Dense (SP-SM)                               |         |
|                    |     |      |                   |               |    |        |                    | Boring Log B-2 Terminated at Depth of 22 feet below ground surface. |         |
|                    |     |      |                   |               |    | 25.0   |                    |   |         |

NOTES: bgs = below ground surface, msl = mean sea level, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched



# RECORD OF SUBSURFACE EXPLORATION

Boring No.: **B-3**

Page 1 of 1

|  |   |  |  |
|--|---|--|--|
| <b>Project:</b> Proposed Chase Bank Branch                                 |   | <b>WAI Project No.:</b> GM2219395.000                      |  |
| <b>Location:</b> 431 Main Street, Reading, Middlesex County, Massachusetts |   | <b>Client:</b> Bohler Engineering MA, LLC                  |  |
| <b>Surface Elevation:</b> ± <u>NS</u> feet above NAVD88                    | <b>Date Started:</b> <u>8/17/2022</u>   | <b>Water Depth   Elevation</b><br>(feet bgs)   (ft NAVD88) | <b>Cave-In Depth   Elevation</b><br>(feet bgs)   (ft NAVD88) |
| <b>Termination Depth:</b> <u>19.0</u> feet bgs                             | <b>Date Completed:</b> <u>8/17/2022</u> | <b>During:</b> <u>11.5</u>   --   ▾                        | <b>At Completion:</b> --   --   ▾                            |
| <b>Proposed Location:</b> <u>Building</u>                                  | <b>Logged By:</b> <u>RK</u>             | <b>At Completion:</b> --   --   ▾                          | <b>At Completion:</b> --   --   ▾                            |
| <b>Drill / Test Method:</b> <u>HSA / SPT</u>                               | <b>Contractor:</b> <u>GS</u>            | <b>24 Hours:</b> --   --   ▾                               | <b>24 Hours:</b> --   --   ▾                                 |
|  | <b>Equipment:</b> <u>CME 85</u>         |  |  |

| SAMPLE INFORMATION |     |      |                   |               |    | DEPTH<br>(feet) | STRATA             | DESCRIPTION OF MATERIALS<br>(Classification)   | REMARKS   |
|--------------------|-----|------|-------------------|---------------|----|-----------------|--------------------|--|---|
| Depth<br>(feet)    | No  | Type | Blows Per 6"      | Rec.<br>(in.) | N  |                 |                    |  |   |
|                    |     |      |                   |               |    | 0.0             | TS                 | 2" Topsoil   |   |
| 0 - 2              | S-1 | X    | 6 - 9 - 12 - 12   | 18            | 21 |                 | EXISTING<br>FILL   | Brown, Medium Dense, Poorly Graded Sand with Silt and Gravel (FILL)                        | Cobbles<br><br>Auger Grinding on<br>Cobbles @ 9 fbg |
| 2 - 4              | S-2 | X    | 15 - 6 - 8 - 9    | 14            | 14 |                 |                    | As Above (FILL)<br>Dark Brown, Medium Dense, Silty Sand with Gravel, Trace Organics (FILL) |   |
| 5 - 7              | S-3 | X    | 7 - 5 - 37 - 42   | 18            | 42 |                 |                    | Brown, Dense, Processed Sand and Gravel (FILL)   |   |
| 7 - 7.3            | S-4 | X    | 50/4"             | 3             | -  |                 |                    | As Above (FILL)<br>Fill Includes Trash (ceramics, mortar, plastic wrapping)                |   |
|                    |     |      |                   |               |    | 10.0            | GLACIAL<br>OUTWASH | Brown, Very Dense, Poorly Graded Sand with Silt and Gravel (SP-SM)                         |   |
| 10 - 12            | S-5 | X    | 23 - 33 - 29 - 24 | 16            | 62 |                 |                    | As Above, Dense (SP-SM)  |   |
| 15 - 17            | S-6 | X    | 5 - 10 - 22 - 27  | 12            | 32 |                 |                    | As Above, Medium Dense (SP-SM)   |   |
| 17 - 19            | S-7 | X    | 17 - 13 - 8 - 10  | 10            | 21 |                 |                    |  |   |
|                    |     |      |                   |               |    | 20.0            |                    | Boring Log B-3 Terminated at Depth of 19 feet below ground surface.                        |   |
|                    |     |      |                   |               |    | 25.0            |                    |  |   |

NOTES: bgs = below ground surface, msl = mean sea level, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched





# RECORD OF SUBSURFACE EXPLORATION

Boring No.: B-4

Page 1 of 1

|  |   |  |   |
|--|---|--|---|
| <b>Project:</b> Proposed Chase Bank Branch                                 |   | <b>WAI Project No.:</b> GM2219395.000                      |   |
| <b>Location:</b> 431 Main Street, Reading, Middlesex County, Massachusetts |   | <b>Client:</b> Bohler Engineering MA, LLC                  |   |
| <b>Surface Elevation:</b> ± <u>NS</u> feet above NAVD88                    | <b>Date Started:</b> <u>8/17/2022</u>   | <b>Water Depth   Elevation</b><br>(feet bgs)   (ft NAVD88) | <b>Cave-In Depth   Elevation</b><br>(feet bgs)   (ft NAVD88)    |
| <b>Termination Depth:</b> <u>7.7</u> feet bgs                              | <b>Date Completed:</b> <u>8/17/2022</u> | <b>During:</b> <u>    </u>   <u>    </u>   <u>    </u> ▼   | <b>At Completion:</b> <u>    </u>   <u>    </u>   <u>    </u> ▼ |
| <b>Proposed Location:</b> <u>Remote ATM</u>                                | <b>Logged By:</b> <u>RK</u>             | <b>24 Hours:</b> <u>    </u>   <u>    </u>   <u>    </u> ▼ | <b>At Completion:</b> <u>    </u>   <u>    </u>   <u>    </u> ▼ |
| <b>Drill / Test Method:</b> <u>HSA / SPT</u>                               | <b>Contractor:</b> <u>GS</u>            |  | <b>24 Hours:</b> <u>    </u>   <u>    </u>   <u>    </u> ▼      |
|  | <b>Equipment:</b> <u>CME 85</u>         |  |   |

| SAMPLE INFORMATION |     |      |                  |               |    | DEPTH  | STRATA             | DESCRIPTION OF MATERIALS<br>(Classification)                         | REMARKS              |
|--------------------|-----|------|------------------|---------------|----|--------|--------------------|--|----------------------|
| Depth<br>(feet)    | No  | Type | Blows Per 6"     | Rec.<br>(in.) | N  | (feet) |                    |  |                      |
| 0 - 2              | S-1 | X    | 26 - 29 - 12 - 7 | 16            | 41 | 0.0    | EXISTING FILL      | Brown, Dense, Poorly Graded Sand with Gravel, Concrete Pieces (FILL) | Crushed Reclaim Fill |
| 2 - 4              | S-2 | X    | 6 - 7 - 8 - 11   | 4             | 15 | 2.0    | GLACIAL<br>OUTWASH | Brown, Medium Dense, Well-Graded Sand with Silt and Gravel (SW-SM)   |                      |
| 5 - 7              | S-3 | X    | 7 - 30 - 32 - 34 | 18            | 62 | 5.0    |                    | As Above, Very Dense (SW-SM)   |                      |
| 7 - 7.7            | S-4 | X    | 45 - 50/2"       | 6             | -  |        |                    | As Above (SW-SM)   | Cobbles              |
|                    |     |      |                  |               |    | 10.0   |                    | Boring Log B-4 Terminated at Depth of 7.7 feet below ground surface. |                      |
|                    |     |      |                  |               |    | 15.0   |                    |  |                      |
|                    |     |      |                  |               |    | 20.0   |                    |  |                      |
|                    |     |      |                  |               |    | 25.0   |                    |  |                      |

NOTES: bgs = below ground surface, msl = mean sea level, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched



# RECORD OF SUBSURFACE EXPLORATION

Boring No.: **B-5**

Page 1 of 1

|  |   |  |  |
|--|---|--|--|
| <b>Project:</b> Proposed Chase Bank Branch                                 |   | <b>WAI Project No.:</b> GM2219395.000                                      |  |
| <b>Location:</b> 431 Main Street, Reading, Middlesex County, Massachusetts |   | <b>Client:</b> Bohler Engineering MA, LLC                                  |  |
| <b>Surface Elevation:</b> ± <u>NS</u> feet above NAVD88                    | <b>Date Started:</b> <u>8/17/2022</u>   | <b>Water Depth   Elevation</b><br>(feet bgs)   (ft NAVD88)                 | <b>Cave-In Depth   Elevation</b><br>(feet bgs)   (ft NAVD88)               |
| <b>Termination Depth:</b> <u>6.7</u> feet bgs                              | <b>Date Completed:</b> <u>8/17/2022</u> | <b>During:</b> <u>    </u>   <u>    </u>   <input type="checkbox"/>        | <b>At Completion:</b> <u>    </u>   <u>    </u>   <input type="checkbox"/> |
| <b>Proposed Location:</b> <u>ATM Access</u>                                | <b>Logged By:</b> <u>RK</u>             | <b>At Completion:</b> <u>    </u>   <u>    </u>   <input type="checkbox"/> | <b>At Completion:</b> <u>    </u>   <u>    </u>   <input type="checkbox"/> |
| <b>Drill / Test Method:</b> <u>HSA / SPT</u>                               | <b>Contractor:</b> <u>GS</u>            | <b>24 Hours:</b> <u>    </u>   <u>    </u>   <input type="checkbox"/>      | <b>24 Hours:</b> <u>    </u>   <u>    </u>   <input type="checkbox"/>      |
|  | <b>Equipment:</b> <u>CME 85</u>         |  |  |

| SAMPLE INFORMATION |     |              |                          |               |      | DEPTH  | STRATA             | DESCRIPTION OF MATERIALS<br>(Classification)  | REMARKS |
|--------------------|-----|--------------|--------------------------|---------------|------|--------|--------------------|---|---------|
| Depth<br>(feet)    | No  | Type         | Blows Per 6"             | Rec.<br>(in.) | N    | (feet) |                    |   |         |
| 0 - 2              | S-1 | <del>X</del> | 10 - 9 - 8 - 10          | 18            | 17   | 0.0    | EXISTING<br>FILL   | Dark Brown, Medium Dense, Poorly Graded Sand with Gravel mixed with Topsoil, Asphalt, Brick, Concrete Pieces (FILL) |         |
| 2 - 4              | S-2 | <del>X</del> | 10 - 25 - 34 - 43        | 18            | 59   | 2.5    | GLACIAL<br>OUTWASH | Gray-Brown, Very Dense, Well-Graded Sand with Silt and Gravel (SW-SM)   |         |
| 5 - 6.7            | S-3 | <del>X</del> | 13 - 41 - 61 - 50/<br>2" | 10            | >100 | 5.0    |                    | As Above (SW-SM)  | Cobbles |
|                    |     |              |                          |               |      | 10.0   |                    | Boring Log B-5 Terminated at Depth of 6.7 feet below ground surface.  |         |
|                    |     |              |                          |               |      | 15.0   |                    |   |         |
|                    |     |              |                          |               |      | 20.0   |                    |   |         |
|                    |     |              |                          |               |      | 25.0   |                    |   |         |

NOTES: bgs = below ground surface, msl = mean sea level, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched

# RECORD OF SUBSURFACE EXPLORATION

|  |                                  |  |  |
|--|----------------------------------|--|--|
| <b>Project:</b> Proposed Chase Bank Branch                                 |                                  | <b>WAI Project No.:</b> GM2219395.000                      |  |
| <b>Location:</b> 431 Main Street, Reading, Middlesex County, Massachusetts |                                  | <b>Client:</b> Bohler Engineering MA, LLC                  |  |
| <b>Surface Elevation:</b> ± NS feet above NAVD88                           | <b>Date Started:</b> 8/17/2022   | <b>Water Depth   Elevation</b><br>(feet bgs)   (ft NAVD88) | <b>Cave-In Depth   Elevation</b><br>(feet bgs)   (ft NAVD88) |
| <b>Termination Depth:</b> 7.8 feet bgs                                     | <b>Date Completed:</b> 8/17/2022 | <b>During:</b> --   --   ▾                                 | <b>At Completion:</b> --   --   ▾                            |
| <b>Proposed Location:</b> Parking  | <b>Logged By:</b> RK             | <b>24 Hours:</b> --   --   ▾                               | <b>At Completion:</b> --   --   ▾                            |
| <b>Drill / Test Method:</b> HSA / SPT                                      | <b>Contractor:</b> GS            | <b>24 Hours:</b> --   --   ▾                               | <b>24 Hours:</b> --   --   ▾                                 |
|  | <b>Equipment:</b> CME 85         |  |  |

| SAMPLE INFORMATION   |     |      |                  |               |    | DEPTH  | STRATA             | DESCRIPTION OF MATERIALS<br>(Classification)                  | REMARKS |
|--|-----|------|------------------|---------------|----|--------|--------------------|---|---------|
| Depth<br>(feet)  | No  | Type | Blows Per 6"     | Rec.<br>(in.) | N  | (feet) |                    |   |         |
|  |     |      |                  |               |    | 0.0    | PAVEMENT           | 2" Asphalt  |         |
|  |     |      |                  |               |    |        | GRAVEL             | 12" Granular Subbase  |         |
| 1 - 3  | S-1 |      | 5 - 22 - 16 - 7  | 12            | 38 | 1.7    | EXISTING<br>FILL   | Brown, Dense, Silty Sand with Gravel (FILL)                   |         |
|  |     |      |                  |               |    | 1.8    | PAVEMENT           | 2" Asphalt  |         |
|  |     |      |                  |               |    | 2.8    | GRAVEL             | 12" Granular Subbase  |         |
| 3 - 5  | S-2 |      | 2 - 2 - 2 - 2    | 14            | 4  | 5.0    | ORGANIC<br>LAYER   | Black, Very Loose to Loose, Organic Silt and Sand (OL)        |         |
| 5 - 7  | S-3 |      | 8 - 16 - 19 - 33 | 18            | 35 |        | GLACIAL<br>OUTWASH | Brown, Dense, Poorly Graded Sand with Silt and Gravel (SP-SM) |         |
| 7 - 7.8  | S-4 |      | 48 - 50/4"       | 8             | -  |        |                    | As Above (SP-SM)  | Cobbles |
|  |     |      |                  |               |    | 10.0   |                    |   |         |
|  |     |      |                  |               |    | 15.0   |                    |   |         |
|  |     |      |                  |               |    | 20.0   |                    |   |         |
|  |     |      |                  |               |    | 25.0   |                    |   |         |
| Boring Log B-6 Terminated at Depth of 7.8 feet below ground surface. |     |      |                  |               |    |        |                    |   |         |

NOTES: bgs = below ground surface, msl = mean sea level, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched



**APPENDIX D: RAINFALL DATA**

➤ *INTENSITY-DURATION-FREQUENCY CURVE*

**NOAA Atlas 14, Volume 10, Version 3 READING**

**Station ID: 19-6783**

**Location name: Reading, Massachusetts, USA\***

**Latitude: 42.5242°, Longitude: -71.1264°**

**Elevation:**

**Elevation (station metadata): 83 ft\*\***

\* source: ESRI Maps

\*\* source: USGS



**POINT PRECIPITATION FREQUENCY ESTIMATES**

Sanja Perica, Sandra Pavlovic, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Orlan Wilhite

NOAA, National Weather Service, Silver Spring, Maryland

[PF\\_tabular](#) | [PF\\_graphical](#) | [Maps & aeriels](#)

**PF tabular**

| <b>PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)<sup>1</sup></b> |  |                               |                               |                               |                               |                              |                              |                              |                             |                             |
|--|--|-------------------------------|-------------------------------|-------------------------------|-------------------------------|------------------------------|------------------------------|------------------------------|-----------------------------|-----------------------------|
| <b>Duration</b>  | <b>Average recurrence interval (years)</b> |                               |                               |                               |                               |                              |                              |                              |                             |                             |
|  | <b>1</b>                                   | <b>2</b>                      | <b>5</b>                      | <b>10</b>                     | <b>25</b>                     | <b>50</b>                    | <b>100</b>                   | <b>200</b>                   | <b>500</b>                  | <b>1000</b>                 |
| <b>5-min</b>   | <b>0.310</b><br>(0.239-0.390)              | <b>0.374</b><br>(0.288-0.471) | <b>0.479</b><br>(0.368-0.605) | <b>0.565</b><br>(0.432-0.718) | <b>0.685</b><br>(0.509-0.913) | <b>0.775</b><br>(0.565-1.06) | <b>0.870</b><br>(0.618-1.23) | <b>0.981</b><br>(0.659-1.42) | <b>1.14</b><br>(0.740-1.71) | <b>1.28</b><br>(0.809-1.96) |
| <b>10-min</b>  | <b>0.439</b><br>(0.339-0.552)              | <b>0.530</b><br>(0.409-0.667) | <b>0.679</b><br>(0.521-0.856) | <b>0.802</b><br>(0.612-1.02)  | <b>0.971</b><br>(0.721-1.29)  | <b>1.10</b><br>(0.800-1.50)  | <b>1.23</b><br>(0.875-1.75)  | <b>1.39</b><br>(0.932-2.01)  | <b>1.62</b><br>(1.05-2.43)  | <b>1.81</b><br>(1.15-2.77)  |
| <b>15-min</b>  | <b>0.517</b><br>(0.399-0.650)              | <b>0.624</b><br>(0.481-0.785) | <b>0.798</b><br>(0.613-1.01)  | <b>0.943</b><br>(0.720-1.20)  | <b>1.14</b><br>(0.848-1.52)   | <b>1.29</b><br>(0.941-1.76)  | <b>1.45</b><br>(1.03-2.06)   | <b>1.63</b><br>(1.10-2.36)   | <b>1.91</b><br>(1.23-2.86)  | <b>2.13</b><br>(1.35-3.26)  |
| <b>30-min</b>  | <b>0.710</b><br>(0.548-0.893)              | <b>0.857</b><br>(0.661-1.08)  | <b>1.10</b><br>(0.844-1.39)   | <b>1.30</b><br>(0.992-1.65)   | <b>1.57</b><br>(1.17-2.10)    | <b>1.78</b><br>(1.30-2.42)   | <b>2.00</b><br>(1.42-2.83)   | <b>2.25</b><br>(1.51-3.26)   | <b>2.63</b><br>(1.70-3.94)  | <b>2.94</b><br>(1.86-4.50)  |
| <b>60-min</b>  | <b>0.904</b><br>(0.697-1.14)               | <b>1.09</b><br>(0.841-1.37)   | <b>1.40</b><br>(1.07-1.76)    | <b>1.65</b><br>(1.26-2.10)    | <b>2.00</b><br>(1.49-2.67)    | <b>2.27</b><br>(1.65-3.09)   | <b>2.54</b><br>(1.81-3.61)   | <b>2.87</b><br>(1.93-4.15)   | <b>3.35</b><br>(2.17-5.02)  | <b>3.75</b><br>(2.38-5.74)  |
| <b>2-hr</b>  | <b>1.17</b><br>(0.911-1.46)                | <b>1.42</b><br>(1.10-1.78)    | <b>1.83</b><br>(1.42-2.30)    | <b>2.17</b><br>(1.67-2.74)    | <b>2.64</b><br>(1.98-3.51)    | <b>2.99</b><br>(2.20-4.07)   | <b>3.36</b><br>(2.42-4.78)   | <b>3.83</b><br>(2.58-5.50)   | <b>4.54</b><br>(2.94-6.75)  | <b>5.15</b><br>(3.27-7.82)  |
| <b>3-hr</b>  | <b>1.36</b><br>(1.06-1.70)                 | <b>1.66</b><br>(1.29-2.07)    | <b>2.14</b><br>(1.66-2.68)    | <b>2.54</b><br>(1.96-3.20)    | <b>3.09</b><br>(2.33-4.10)    | <b>3.50</b><br>(2.59-4.75)   | <b>3.94</b><br>(2.85-5.60)   | <b>4.50</b><br>(3.04-6.44)   | <b>5.36</b><br>(3.49-7.95)  | <b>6.12</b><br>(3.89-9.24)  |
| <b>6-hr</b>  | <b>1.76</b><br>(1.38-2.17)                 | <b>2.14</b><br>(1.68-2.65)    | <b>2.77</b><br>(2.17-3.44)    | <b>3.30</b><br>(2.56-4.11)    | <b>4.01</b><br>(3.04-5.28)    | <b>4.54</b><br>(3.38-6.12)   | <b>5.12</b><br>(3.72-7.22)   | <b>5.85</b><br>(3.96-8.30)   | <b>6.98</b><br>(4.55-10.3)  | <b>7.97</b><br>(5.09-12.0)  |
| <b>12-hr</b>   | <b>2.23</b><br>(1.76-2.74)                 | <b>2.73</b><br>(2.15-3.35)    | <b>3.53</b><br>(2.78-4.36)    | <b>4.20</b><br>(3.29-5.21)    | <b>5.13</b><br>(3.90-6.69)    | <b>5.81</b><br>(4.34-7.77)   | <b>6.55</b><br>(4.78-9.15)   | <b>7.47</b><br>(5.08-10.5)   | <b>8.89</b><br>(5.82-13.0)  | <b>10.1</b><br>(6.48-15.1)  |
| <b>24-hr</b>   | <b>2.67</b><br>(2.13-3.25)                 | <b>3.31</b><br>(2.63-4.04)    | <b>4.35</b><br>(3.45-5.32)    | <b>5.21</b><br>(4.10-6.42)    | <b>6.40</b><br>(4.90-8.31)    | <b>7.28</b><br>(5.47-9.68)   | <b>8.24</b><br>(6.05-11.5)   | <b>9.44</b><br>(6.45-13.2)   | <b>11.3</b><br>(7.44-16.4)  | <b>13.0</b><br>(8.33-19.2)  |
| <b>2-day</b>   | <b>3.03</b><br>(2.43-3.67)                 | <b>3.83</b><br>(3.06-4.64)    | <b>5.14</b><br>(4.10-6.25)    | <b>6.22</b><br>(4.93-7.61)    | <b>7.72</b><br>(5.95-9.98)    | <b>8.81</b><br>(6.68-11.7)   | <b>10.0</b><br>(7.44-14.0)   | <b>11.6</b><br>(7.95-16.1)   | <b>14.2</b><br>(9.32-20.4)  | <b>16.4</b><br>(10.6-24.0)  |
| <b>3-day</b>   | <b>3.31</b><br>(2.67-4.00)                 | <b>4.18</b><br>(3.36-5.04)    | <b>5.59</b><br>(4.47-6.76)    | <b>6.76</b><br>(5.38-8.23)    | <b>8.37</b><br>(6.48-10.8)    | <b>9.54</b><br>(7.26-12.6)   | <b>10.8</b><br>(8.09-15.1)   | <b>12.6</b><br>(8.63-17.4)   | <b>15.4</b><br>(10.1-22.0)  | <b>17.9</b><br>(11.5-26.0)  |
| <b>4-day</b>   | <b>3.59</b><br>(2.90-4.31)                 | <b>4.48</b><br>(3.61-5.39)    | <b>5.93</b><br>(4.76-7.16)    | <b>7.14</b><br>(5.70-8.67)    | <b>8.80</b><br>(6.83-11.3)    | <b>10.0</b><br>(7.64-13.2)   | <b>11.4</b><br>(8.49-15.7)   | <b>13.1</b><br>(9.04-18.1)   | <b>16.0</b><br>(10.6-22.9)  | <b>18.6</b><br>(12.0-27.0)  |
| <b>7-day</b>   | <b>4.36</b><br>(3.54-5.21)                 | <b>5.28</b><br>(4.28-6.32)    | <b>6.79</b><br>(5.48-8.15)    | <b>8.04</b><br>(6.45-9.71)    | <b>9.76</b><br>(7.61-12.4)    | <b>11.0</b><br>(8.44-14.4)   | <b>12.4</b><br>(9.30-17.0)   | <b>14.2</b><br>(9.84-19.5)   | <b>17.2</b><br>(11.4-24.4)  | <b>19.8</b><br>(12.8-28.7)  |
| <b>10-day</b>  | <b>5.06</b><br>(4.12-6.03)                 | <b>6.01</b><br>(4.89-7.17)    | <b>7.56</b><br>(6.12-9.04)    | <b>8.84</b><br>(7.12-10.6)    | <b>10.6</b><br>(8.29-13.4)    | <b>11.9</b><br>(9.13-15.5)   | <b>13.3</b><br>(9.97-18.1)   | <b>15.2</b><br>(10.5-20.7)   | <b>18.1</b><br>(12.0-25.5)  | <b>20.7</b><br>(13.4-29.7)  |
| <b>20-day</b>  | <b>7.04</b><br>(5.78-8.33)                 | <b>8.08</b><br>(6.62-9.57)    | <b>9.79</b><br>(7.99-11.6)    | <b>11.2</b><br>(9.09-13.4)    | <b>13.2</b><br>(10.3-16.4)    | <b>14.6</b><br>(11.2-18.6)   | <b>16.2</b><br>(12.0-21.4)   | <b>17.9</b><br>(12.5-24.2)   | <b>20.6</b><br>(13.7-28.8)  | <b>22.8</b><br>(14.8-32.5)  |
| <b>30-day</b>  | <b>8.69</b><br>(7.16-10.2)                 | <b>9.81</b><br>(8.07-11.6)    | <b>11.6</b><br>(9.53-13.8)    | <b>13.2</b><br>(10.7-15.6)    | <b>15.2</b><br>(12.0-18.8)    | <b>16.8</b><br>(12.9-21.2)   | <b>18.5</b><br>(13.6-24.1)   | <b>20.2</b><br>(14.1-27.1)   | <b>22.6</b><br>(15.2-31.4)  | <b>24.5</b><br>(16.0-34.8)  |
| <b>45-day</b>  | <b>10.8</b><br>(8.92-12.7)                 | <b>12.0</b><br>(9.90-14.1)    | <b>13.9</b><br>(11.5-16.4)    | <b>15.6</b><br>(12.7-18.4)    | <b>17.8</b><br>(14.0-21.8)    | <b>19.5</b><br>(15.0-24.4)   | <b>21.2</b><br>(15.6-27.3)   | <b>22.9</b><br>(16.1-30.6)   | <b>25.1</b><br>(16.9-34.7)  | <b>26.7</b><br>(17.5-37.8)  |
| <b>60-day</b>  | <b>12.6</b><br>(10.4-14.7)                 | <b>13.8</b><br>(11.5-16.2)    | <b>15.9</b><br>(13.1-18.7)    | <b>17.6</b><br>(14.4-20.8)    | <b>19.9</b><br>(15.7-24.3)    | <b>21.7</b><br>(16.7-27.0)   | <b>23.5</b><br>(17.3-30.0)   | <b>25.2</b><br>(17.7-33.5)   | <b>27.2</b><br>(18.3-37.5)  | <b>28.7</b><br>(18.7-40.4)  |

<sup>1</sup> Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

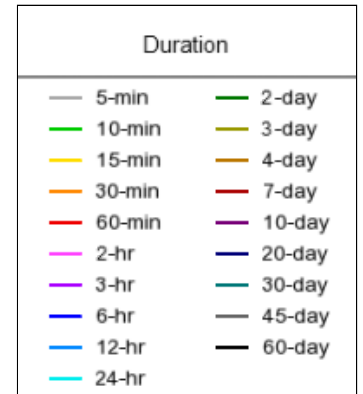
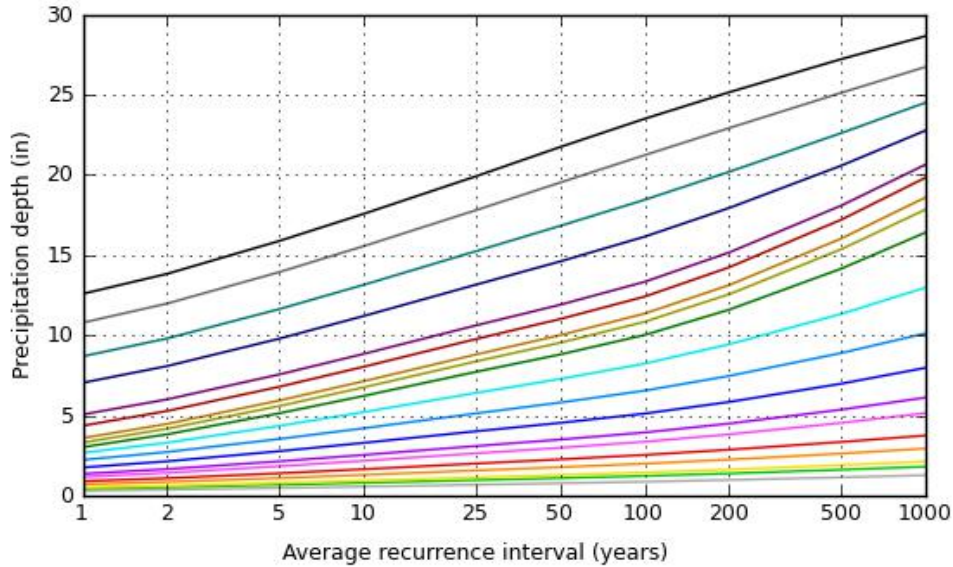
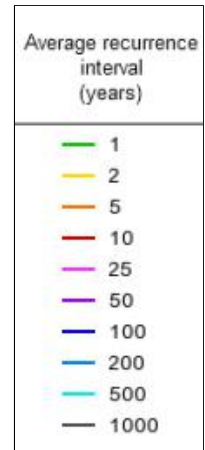
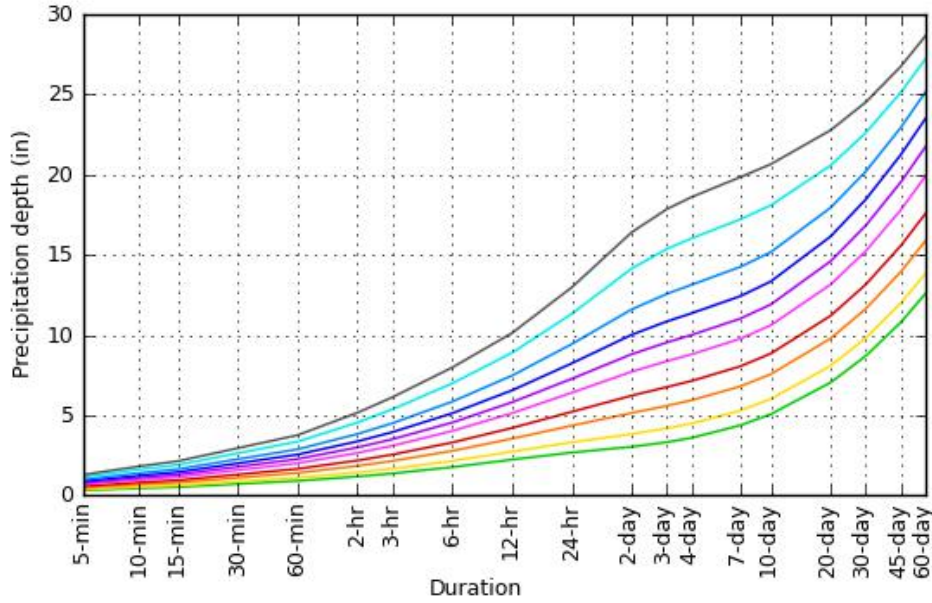
Please refer to NOAA Atlas 14 document for more information.

[Back to Top](#)

**PF graphical**

PDS-based depth-duration-frequency (DDF) curves

Latitude: 42.5242°, Longitude: -71.1264°



[Back to Top](#)

**Maps & aerials**

**Small scale terrain**





Large scale terrain



Large scale map



Large scale aerial



[Back to Top](#)

---

[US Department of Commerce](#)  
[National Oceanic and Atmospheric Administration](#)  
[National Weather Service](#)  
[National Water Center](#)  
1325 East West Highway  
Silver Spring, MD 20910  
Questions?: [HDSC.Questions@noaa.gov](mailto:HDSC.Questions@noaa.gov)

[Disclaimer](#)

## **APPENDIX E: OPERATION AND MAINTENANCE**

- *STORMWATER OPERATION AND MAINTENANCE PLAN*
- *INSPECTION REPORT*
- *INSPECTION AND MAINTENANCE LOG FORM*
- *LONG-TERM POLLUTION PREVENTION PLAN*
- *ILLICIT DISCHARGE STATEMENT*
- *SPILL PREVENTION*



# **STORMWATER OPERATION AND MAINTENANCE PLAN**

*Chase Bank  
431 Main Street  
Reading, MA*

## **RESPONSIBLE PARTY DURING CONSTRUCTION:**

*T.B.D.*

## **RESPONSIBLE PARTY POST CONSTRUCTION:**

*Chase Bank  
431 Main Street  
Reading, MA*

### **Construction Phase**

During the construction phase, all erosion control devices and measures shall be maintained in accordance with the final record plans, local/state approvals and conditions, the EPA Construction General Permit and the Stormwater Pollution Prevention Plan (SWPPP). Additionally, the maintenance of all erosion / siltation control measures during construction shall be the responsibility of the general contractor. Upon proper notice to the property owner, the Town/City or its authorized designee shall be allowed to enter the property at a reasonable time and in a reasonable manner for the purposes of inspection.

### **Post Development Controls**

Once construction is completed, the post development stormwater controls are to be operated and maintained in compliance with the following permanent procedures (note that the continued implementation of these procedures shall be the responsibility of the Owner or its assignee):

1. Parking lots and on-site driveways: Sweep at least four (4) times per year and on a more frequent basis depending on sanding operations. All resulting sweepings shall be collected and properly disposed of offsite in accordance with MADEP and other applicable requirements.
2. Catch basins, manholes and piping: Inspect four (4) times per year and at the end of foliage and snow-removal seasons. These features shall be cleaned four (4) times per year. or whenever the depth of deposits is greater than or equal to one half the depth from the bottom of the invert of the lowest pipe in the catch basin or underground system. Accumulated sediment and hydrocarbons present must be removed and properly disposed of off-site in accordance with MADEP and other applicable requirements.

**STORMWATER MANAGEMENT SYSTEM**  
**POST-CONSTRUCTION INSPECTION REPORT**

**LOCATION:**

*Chase Bank  
431 Main Street  
Reading, MA*

**RESPONSIBLE PARTY:**

*Chase Bank  
431 Main Street  
Reading, MA*

|  |                  |
|--|------------------|
| NAME OF INSPECTOR:   | INSPECTION DATE: |
| Note Condition of the Following (sediment depth, debris, standing water, damage, etc.):                |                  |
| Other:   |                  |
| Note Recommended Actions to be taken on the Following (sediment and/or debris removal, repairs, etc.): |                  |
| Other:   |                  |
| Other:   |                  |
| Comments:  |                  |
|  |                  |





|  |  |  |  |
|--|--|--|--|
|  |  |  |  |
|--|--|--|--|

## **LONG-TERM POLLUTION PREVENTION PLAN**

*Chase Bank  
431 Main Street  
Reading, MA*

### **RESPONSIBLE PARTY DURING CONSTRUCTION:**

*T.B.D.*

### **RESPONSIBLE PARTY POST CONSTRUCTION:**

*Chase Bank  
431 Main Street  
Reading, MA*

For this site, the Long-Term Pollution Prevention Plan will consist of the following:

- No outdoor maintenance or washing of vehicles allowed.
- The property owner shall be responsible for “good housekeeping” including proper periodic maintenance of building and pavement areas, curbing, landscaping, etc.
- Proper storage and removal of solid waste (dumpsters).
- Sweeping of driveways a minimum of twice per year with a commercial cleaning unit. Any sediment removed shall be disposed of in accordance with applicable local and state requirements.
- Regular inspections and maintenance of Stormwater Management System as noted in the “O&M Plan”.
- Snow removal shall be the responsibility of the property owner. Snow shall not be plowed, dumped and/or placed in forebays, infiltration basins or similar stormwater controls. Salting and/or sanding of pavement / walkway areas during winter conditions shall only be done in accordance with all state/local requirements and approvals.

## **OPERATON AND MAINTENANCE TRAINING PROGRAM**

The Owner will coordinate an annual in-house training session to discuss the Operations and Maintenance Plan, the Long-Term Pollution Prevention Plan, and the Spill Prevention Plan and response procedures. Annual training will include the following:

### Discuss the Operations and Maintenance Plan

- Explain the general operations of the stormwater management system and its BMPs
- Identify potential sources of stormwater pollution and measures / methods of reducing or eliminating that pollution
- Emphasize good housekeeping measures

### Discuss the Spill Prevention and Response Procedures

- Explain the process in the event of a spill
- Identify potential sources of spills and procedures for cleanup and /or reporting and notification
- Complete a yearly inventory or Materials Safety Data sheets of all tenants and confirm that no potentially harmful chemicals are in use.
- Trash and other debris shall be removed from all areas of the site at least twice yearly.
- In no case shall snow be disposed of or stored in resource areas (wetlands, floodplain, streams or other water bodies).
- If necessary, stockpiled snow will be removed from the Site and disposed of at an off-site location in accordance with all local, state and federal regulations.

## **ILLICIT DISCHARGE STATEMENT**

Certain types of non-stormwater discharges are allowed under the U.S. Environmental Protection Agency Construction General Permit. These types of discharges will be allowed under the conditions that no pollutants will be allowed to come in contact with the water prior to or after its discharge. The control measures which have been outlined previously in this LTPPP will be strictly followed to ensure that no contamination of these non-storm water discharges takes place. Any existing illicit discharges, if discovered during the course of the work, will be reported to MassDEP and the local DPW, as applicable, to be addressed in accordance with their respective policies. No illicit discharges will be allowed in conjunction with the proposed improvements.

Duly Acknowledged:

---

Name & Title



## **SPILL PREVENTION AND RESPONSE PROCEDURES** **(POST CONSTRUCTION)**

In order to prevent or minimize the potential for a spill of Hazardous Substances or Oil or come into contact with stormwater, the following steps will be implemented:

1. All Hazardous Substances or Oil (such as pesticides, petroleum products, fertilizers, detergents, acids, paints, paint solvents, cleaning solvents, etc.) will be stored in a secure location, with their lids on, preferably under cover, when not in use.
2. The minimum practical quantity of all such materials will be kept on site.
3. A spill control and containment kit (containing, for example, absorbent materials, acid neutralizing powder, brooms, dust pans, mops, rags, gloves, goggles, plastic and metal trash containers, etc.) will be provided on site.
4. Manufacturer's recommended methods for spill cleanup will be clearly posted and site personnel will be trained regarding these procedures and the location of the information and cleanup supplies.
5. It is the OWNER's responsibility to ensure that all Hazardous Waste on site is disposed of properly by a licensed hazardous material disposal company. The OWNER is responsible for not exceeding Hazardous Waste storage requirements mandated by the EPA or state and local authorities.

In the event of a spill of Hazardous Substances or Oil, the following procedures should be followed:

1. All measures should be taken to contain and abate the spill and to prevent the discharge of the Hazardous Substance or Oil to stormwater or off-site. (The spill area should be kept well ventilated and personnel should wear appropriate protective clothing to prevent injury from contact with the Hazardous Substances.)
2. For spills of less than five (5) gallons of material, proceed with source control and containment, clean-up with absorbent materials or other applicable means unless an imminent hazard or other circumstances dictate that the spill should be treated by a professional emergency response contractor.
3. For spills greater than five (5) gallons of material immediately contact the MADEP at the toll-free 24-hour statewide emergency number: **1-888-304-1133**, the local fire department (**9-1-1**) and an approved emergency response contractor. Provide information on the type of material spilled, the location of the spill, the quantity spilled, and the time of the spill to the emergency response contractor or coordinator, and proceed with prevention, containment and/or clean-up if so desired. (Use the form provided, or similar).
4. If there is a Reportable Quantity (RQ) release, then the National Response Center should be notified immediately at (800) 424-8802; within 14 days a report should be submitted to the EPA regional office describing the release, the date and circumstances of the release and the steps taken to prevent another release. This Pollution Prevention Plan should be updated to reflect any such steps or actions taken and measures to prevent the same from reoccurring.



Cause of Spill: \_\_\_\_\_  
\_\_\_\_\_

Measures Taken to Clean up Spill: \_\_\_\_\_  
\_\_\_\_\_

Type of equipment: \_\_\_\_\_ Make: \_\_\_\_\_ Size: \_\_\_\_\_

License or S/N: \_\_\_\_\_

Location and Method of Disposal \_\_\_\_\_  
\_\_\_\_\_

Procedures, method, and precautions instituted to prevent a similar occurrence from recurring: \_\_\_\_\_  
\_\_\_\_\_

Additional Contact Numbers:

- DEPARTMENT OF ENVIRONMENTAL PROTECTION (DEP) EMERGENCY PHONE: 1-888-304-1133
- NATIONAL RESPONSE CENTER PHONE: (800) 424-8802
- U.S. ENVIRONMENTAL PROTECTION AGENCYPHONE: (888) 372-7341



# Memo

**To:** Andrew MacNichol, Community Development Director

**From:** Ryan A. Percival, P.E., Town Engineer;

**CC:** Community Planning and Development Commission;

**Date:** December 8, 2022

**Re:** Proposed 25 Haven Street Mixed-Use Development

---

Materials reviewed:

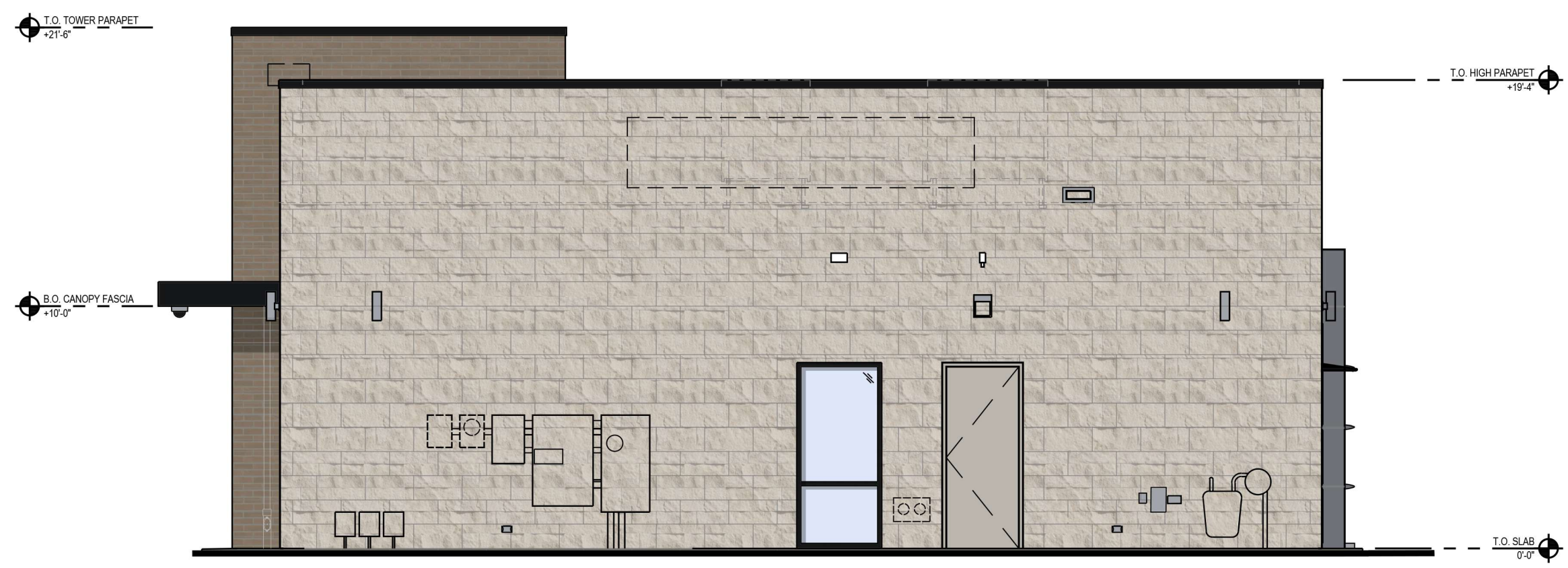
- Civil Engineering Site Plan Review and Special Permit Set entitled; "25 Haven Street Mixed-Use Development", 25 Haven Street Reading, Massachusetts; prepared by Hayes Engineering, Inc.; dated November 22, 2022
- Stormwater Management Report; prepared by Hayes Engineering, Inc.; dated November 22, 2022

The Engineering Division has reviewed the proposed site application for the proposed project and offers the following comments:

- The property has a DEP Reportable Release, RTN #3-0013004
- Construction stone entrance shall be a minimum of 50' in length and noted on the plan.
- The stormwater management report utilizes the NOAA Atlas 14 rainfall data.
- Post-development runoff volumes and flows have been reduced for the 2, 10, 25 and 100-year storms.
- The Engineering Division will work with the engineer to coordinate the private drain connections to the Town's system, including location, size, and material. Upgrades may be needed to the Town's drainage system.
- Test pits were performed and indicate an Estimated Seasonal High Groundwater 96" below grade at elevation 98.5
- The stormwater report shall include Phosphorous removal calculations.
- Please clarify the vertical standpipe overflow, it's unclear what this is for and its function.
- Domestic water and fire service should come off Haven Street which is currently being replaced with a 12" CLDI pipe. The current design has the services off an unlined 6" water main.
- Fire flow test shall be performed.
- Sewer flow study shall be performed.
- Label size and type of all utilities
- The plan shall show the dimensions of the driveway opening, a maximum of 24' is allowed per the Select Board Policies.
- All electric utilities shall be underground
- The design consultant shall coordinate with the Engineering Division on the updated utility improvements on Haven Street. The plan shall be updated to reflect the new utility locations.
- ADA Accessible space shall be labeled as Van space
- Trench paving in the Town ROW shall meet Town Standards for this area.
- This site is subject to a Sewer I/I Connection Fee.
- An O&M document should be developed for maintenance and inspections of the above infrastructure as well as the infiltration system.
- All utilities shall be approved materials and installed in accordance with the Department of Public Works Standards.
- Engineering Division shall be notified 72 hours in advance to mark out Town utilities.
- All water, sewer, curb cut, street opening, and Jackie's Law excavation permits shall be obtained at the Engineering Division prior to any excavations.

- All site work shall be inspected by the Engineering Division. The Applicant/Owner's contractor shall submit a construction schedule of proposed work. All inspections shall be scheduled 48 hours in advance.
- An approved site as-built shall be submitted to the Engineering Division within 60 days of certificate of occupancy. The as-built shall be submitted in mylar and electronic ACAD format.

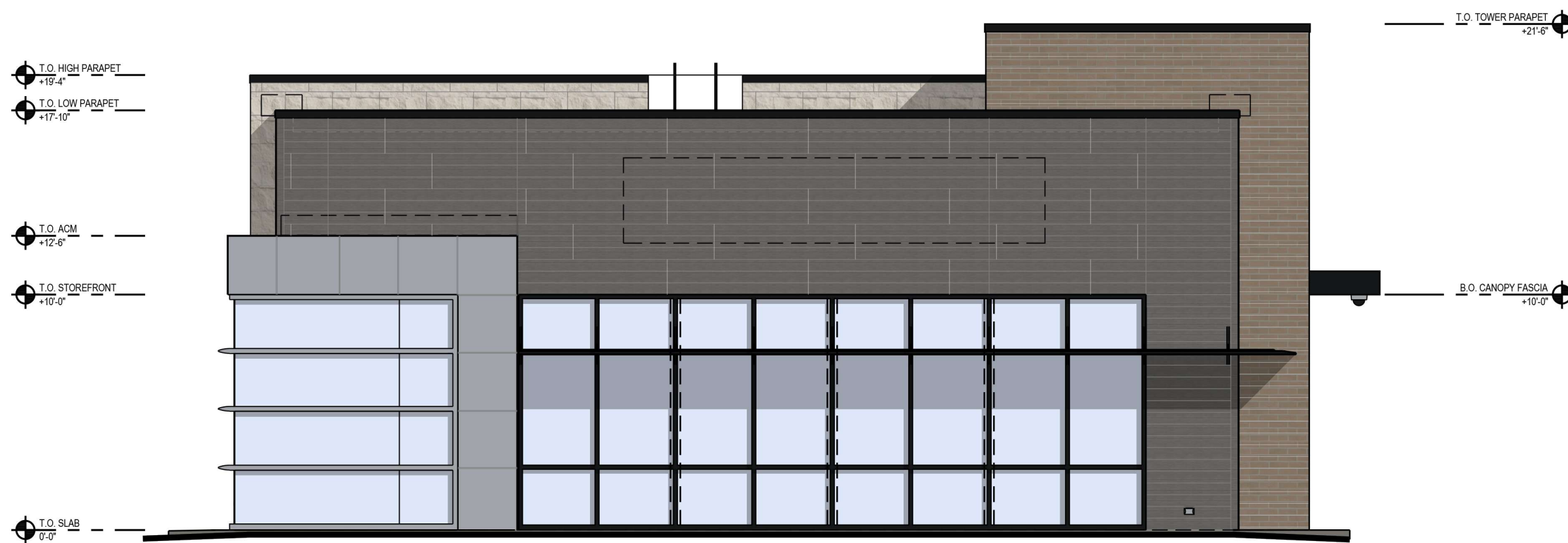




EAST ELEVATION



NORTH ELEVATION



WEST ELEVATION



SOUTH ELEVATION

-   
 STOREFRONT  
 APPLICATION: EXTERIOR  
 COLOR: CLEAR ANODIZED
-   
 STOREFRONT/CANOPY/ROOFING/COPING  
 APPLICATION: EXTERIOR  
 COLOR: BLACK ANODIZED
-   
 PAINT  
 APPLICATION: EXTERIOR  
 COLOR: TO MATCH SHERWIN WILLIAMS  
 SW-7045 INTELLECTUAL GRAY
-   
 PAINT  
 APPLICATION: EXTERIOR  
 COLOR: TO MATCH SHERWIN WILLIAMS  
 SW-7036 ACCESSIBLE BEIGE
-   
 CORONADO STONE  
 APPLICATION: EXTERIOR  
 COLOR: CHISELED LIMESTONE - CREAM
-   
 ALUMINUM COMPOSITE MATERIAL (AMC)  
 APPLICATION: CANOPY  
 COLOR: "CHASE SILVER"
-   
 NICHHA  
 APPLICATION: EXTERIOR  
 COLOR: VINTAGEWOOD - BARK
-   
 ENDICOTT THIN BRICK  
 APPLICATION: EXTERIOR  
 COLOR: LIGHT GREY BLEND



February 6, 2023

Town of Reading  
Community Planning and Development Commission  
16 Lowell Street  
Reading, MA 01867

Attention: Andrew MacNichol, Staff Planner

**RE: Proposed Chase Bank  
Site Plan Review  
431 Main Street, Reading, MA 01867**


Dear Mr. MacNichol:

Please find the following enclosed documents for the Site Plan Review Application for the proposed Chase Bank at 431 Main Street:

- Twelve (12) copies of the Site Plan Review Application Packet including:
  - Site Plan Review Application & Checklist;
  - Project Narrative
  - Abutters Lists
  - Copy of Payment
- Six (6) full size (24"x36") sets of the Proposed Site Plan Documents prepared by Bohler and dated January 3, 2023;
- Six (6) full size (24"x36") sets of the Proposed Floor Plan prepared by Core States Group dated July 25, 2022;
- Six (6) full size (24"x36") sets of the Proposed Exterior Elevations prepared by Core States Group dated September 9, 2022;
- Eight (8) half size (11"x17") copies of the above Site Plans, Floor Plan and Building Elevation Plans;
- Four (4) copies of the Sign Package prepared by Philadelphia Sign and dated October 17, 2022;
- Four (4) copies of the Drainage Memo prepared by Bohler and dated February 3, 2023;
- Four (4) copies of the Traffic Impact Study prepared by McMahon dated January, 2023;
- A USB drive containing all of the aforementioned documents;
- Site Plan Review Application Fee Check # 38166 in the amount of \$8,500.00

We look forward to discussing this project further with you at your earliest convenience. do not hesitate to contact us at (508) 480-9900 should you have any questions or wish to discuss further.

Sincerely,  
**BOHLER**



Joey Fonseca  
Cc: Jose Sanchez, Core States Group



Randy Miron

# **SITE PLAN REVIEW APPLICATION**

**Application:**

**Property Address** 431 Main Street, Reading MA, 01867

**Assessors Map** 17 **Lot** 63 & 65

**Name of Applicant** Chase Bank c/o Bohler

Address 352 Turnpike Road, Southborough, MA 01772

Email jfonseca@bohlereng.com

Phone / Fax 508-480-9900

**Name of Owner (if not applicant)** Gray's Main & Washington LLC (431 Main St), Charles Gray (167 Washington St)

Address 15 Heritage Lane, Lynnfield, MA 01940

Email \_\_\_\_\_

Phone / Fax \_\_\_\_\_

**Name of Engineer** Joey Fonseca

Firm Bohler

Address 352 Turnpike Road, Southborough MA, 01772

Email jfonseca@bohlereng.com

Phone / Fax \_\_\_\_\_

**Name of Attorney** n/a

Firm \_\_\_\_\_

Address \_\_\_\_\_

Email \_\_\_\_\_

Phone / Fax \_\_\_\_\_

**Name of Architect** James Lalli

Firm Core States Group

Address 46 East Main Street Suite 201, Somerville, NJ 08876

Email jlalli@core-states.com

Phone / Fax 908-462-9949

**Current Use of the Property** Gas Station & Vehicle Storage

**Proposed Use of the Property** Bank

**Brief Description of the Project** \_\_\_\_\_

Proposed Bank with parking and two way circulation around the building. Driveway

connections to both Washington Street and Main Street. Enhancements for adjacent lot

(167 Washington St) include demolition of existing paved areas, removal of debris and all

disturbed areas will be loamed and seeded.



**Estimated Construction Cost of the Project** \$ \$3,000,000.00

**Proposed Building Size (SF)** 3,293 **Lot Size** 16,276 SF (.374 AC)

**Number Parking Spaces Provided** 15

List other Permit Requirements (list date of application thereof): \_\_\_\_\_

Conservation Commission n/a

Zoning Relief n/a

Public Works Water & Sewer Connections

Board of Selectmen n/a

Board of Health n/a

Historical Commission n/a

Historic Districts Commission n/a

State Permits:  
DEP n/a

MHD n/a

Other \_\_\_\_\_

21E filing TBD

List all easements, liens, mortgages, restrictions, or other encumbrances: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Certifications:**

The undersigned hereby certifies:

- 1 That the aforementioned requisite number of copies of the application, including the Checklist for Site Plan Review, plans and all attachments have been delivered to the Public Services Department.
- 2 That a Certified List of Abutters within 300 feet of the subject property – and all other interested parties – together with a stamped, plain (NO RETURN ADDRESS) envelope addressed to each abutter and interested party has been delivered to the Public Services Department.
- 3 That a Certified Check for the required Application Fee in the amount of \$ \$8,500.00 has been delivered to the Public Services Department.
- 4 That he/she understands and hereby agrees that, in addition to the Application Fee identified in Item 3 above, if the Community Planning and Development Commission, in the course of its review of this application, determines at its sole and absolute discretion that review of all or any part of this proposed project by (an) outside, independent consultant(s) of the Commission's sole choosing is necessary for proper evaluation of this project or its possible effects on any matter of public interest, that he/she shall



# CHECKLIST



| <b>Checklist for Site Plan Review</b>   |                 |               |
|---|-----------------|---------------|
|   | <b>Provided</b> | <b>Waived</b> |
| <b>A Site Plan Review Application &amp; Checklist</b>   | X               |               |
| <b>B Fee (Certified Check)</b>  | X               |               |
| <b>C Certified Abutters List</b>  | X               |               |
| <b>D Project Narrative and Impact Statement</b>   | X               |               |
| 1 Municipal Services  | X               |               |
| 2 Hours of Operation  | X               |               |
| 3 Landscaping & Lighting  | X               |               |
| 4 Traffic & Parking   | X               |               |
| 5 Trash Removal & Hazardous Materials Storage   | X               |               |
| 6 Resource Areas - Wetlands/Rivers/Floodplains/Habitats   | X               |               |
| 7 Construction Impacts & Anticipated Schedule   | X               |               |
| <b>E Plain White Envelopes Labeled with Abutters' Addresses (no return address)</b>   | X               |               |
| <b>F Locus Plan (at 1"=400', or larger if necessary to show clarity, showing relation of property to surrounding area &amp; zoning)</b> | X               |               |
| <b>G Existing Conditions Plan (Stamped by PLS or PE)</b>  | X               |               |
| 1 Grading at 2' Contour Intervals   | X               |               |
| 2 Drainage  | X               |               |
| 3 Utilities   | X               |               |
| 4 Landscaping & Vegetation  | X               |               |
| 5 Impervious Surfaces   | X               |               |
| 6 Structures  | X               |               |
| 7 Resource Areas - Wetlands/Rivers/Floodplains/Habitats   | N/A             |               |
| 8 Ownership of Direct Abutters  | X               |               |
| <b>H Proposed Site Layout Plan (Stamped by PLS or PE)</b>   | X               |               |
| 1 Lot Boundary (metes & bounds)   | X               |               |
| 2 Resource Area(s) & Buffer Delineations  | X               |               |
| 3 Structures & Setbacks (including Zoning Compliance Table)   | X               |               |
| 4 Access Drives/Driveway Aprons/Connections to Streets  | X               |               |
| 5 Parking/Loading (including Parking Compliance Calc.)  | X               |               |
| 6 Fencing (including detail)  | N/A             |               |
| 7 Walls (including detail)  | N/A             |               |
| 8 Walkways (including detail)   | X               |               |
| 9 Outdoor Lighting (including specification)  | X               |               |
| 10 Trash Receptacle (including enclosure or screening)  | N/A             |               |
| 11 Signage (including dimensioned details)  | X               |               |
| <b>I Grading and Drainage Plan (Stamped by PLS or PE)</b>   | X               |               |
| 1 2' Contour Intervals with Spot Grades as Necessary  | X               |               |
| 2 Stormwater Management Structures & Features   | X               |               |
| 3 Resource Area(s) & Buffer Delineations  | N/A             |               |
| 4 Limit of Work Delineation   | X               |               |
| 5 Erosion Control(s)  | X               |               |
| <b>J Utility Plan (Stamped by PLS or PE)</b>  | X               |               |
| 1 Sewer   | X               |               |
| 2 Water   | X               |               |
| 3 Hydrants/Fire Alarm   | X               |               |
| 4 Electric, Telephone, Cable  | X               |               |

| <b>Checklist for Site Plan Review</b>  |                 |               |
|--|-----------------|---------------|
|  | <b>Provided</b> | <b>Waived</b> |
| <b>K Architectural Plans (Stamped by Registered Architect)</b>   | X               |               |
| 1 Floor Plans (with dimensions)  | X               |               |
| 2 Elevations (with dimensions)   | X               |               |
| 3 Color Rendering  | X               |               |
| <b>L Landscape Plan (Stamped by PLS or PE)</b>   | X               |               |
| 1 Limit of Work Delineation  | X               |               |
| 2 Existing Vegetation Proposed to be Saved and/or Removed  | X               |               |
| 3 Plant List with Key to Plan  | X               |               |
| 4 Screening & Street Trees   | X               |               |
| 5 Impervious Surfaces & Parking Areas  | X               |               |
| 6 Resource Area(s) & Buffer Delineations   | X               |               |
| 7 Snow Storage Areas   | X               |               |
| 8 Open Space and/or Recreation Areas   | X               |               |
| 9 Stormwater Features – Detention/Retention Areas, LID   | X               |               |
| <b>M Photometric Plan</b>  | X               |               |
| 1 Location(s) and Specification(s) for Outdoor Lighting  | X               |               |
| 2 (free-standing and building-mounted)   | X               |               |
| 3 Predicted Lighting Levels Based on Proposed Fixtures   | X               |               |
| 4 Detail Sheet   | X               |               |
| <b>N Construction Details (Stamped by PLS or PE)</b>   | X               |               |
| 1 Roadway/Driveway Apron Profiles/Cross Sections   | X               |               |
| <b>O Drainage Calculations</b> (per MassDEP Stormwater Regulations)  | X               |               |
| <b>P Stormwater Pollution Prevention Plan (SWPPP)</b><br>(for site disturbance > 1 acre, in compliance with NPDES) | N/A             |               |
| <b>Q Traffic Study</b>   | X               |               |

# **PROJECT NARRATIVE**



## Project Narrative & Impact Statement:

The subject site is comprised of two (2) parcels. 431 Main Street (Assessors Map 17 Lot 63) is located within the Business B District with an area of approximately 0.37 acres. This lot is currently an active fueling station and auto care center. 167 Washington Street (Assessors Map 17 Lot 65) is located within the Single Family 15 District and has an area of approximately 0.23 acres. This is currently a vacant lot with that is being used for miscellaneous storage. A quick serve restaurant exists to the south of this site, auto repair to the north, office/retail to the west and residential to the east.

The applicant proposes to construct a ±3,300 square feet Chase Bank on the lot of 431 Main Street along with associated parking, walkways, landscaping, and utility connections. All the proposed bank improvements will be located within the 431 Main Street parcel. The work being proposed on the adjacent residential parcel involves removing the existing cracked asphalt and debris. This area will be loamed and seeded.

## Municipal Utility Impacts:

The demand on water & sewer for the proposed bank use will be less than the demand of the current fueling station and auto care center. The existing sewer demand is approximately 400 GPD based on Title V sewage flow criteria for a two (2) island gas station with two (2) service bays. The proposed use, based on Office Building, is approximately 248 GPD.

Stormwater runoff generated from the proposed project will also be reduced over the existing condition. Under the existing condition, stormwater generated from 431 Main Street sheet flows toward Main Street and Washington Street. The stormwater generated under the proposed condition will be collected using deep-sump catch basins for water quality improvements prior to conveying stormwater to the existing drainage system within Main Street via an existing stormwater connection from the site. Along with the water quality improvements, the total impervious coverage will be decreased by approximately 3,500 square feet which results in less stormwater being generated in all design storms. This site as proposed is considered a redevelopment and the stormwater management has been designed to the maximum extent practicable. See the included Drainage Memo for additional information.

## Hours of Operation:

The hours of operation are expected to be the following:

- Monday-Friday: 9:00am – 5:00pm
- Saturday: 9:10am – 1:00pm
- Sunday: Closed

## Landscaping and Lighting:

As part of this project, the landscaping will be significantly improved over the existing condition. There is very little to no vegetation for the 421 Main Street Parcel and the project proposes a total of approximately 26 deciduous and evergreen trees and approximately 149 shrubs and ornamentals ground cover. Within 167 Washington Street, there are currently a few mature trees that will remain. The existing paved areas will be removed. This parcel will be loamed and seeded in the post development condition.

Lighting will also be improved through the use of dark sky compliant, LED lighting. The project proposes two (2) pole mounted lights at a height of 20-ft along with building mounted lights along door locations and walkways. The existing roof mounted flood lights and pole lights will be removed.

## Traffic & Parking:

The site currently contains two (2) full movement curb cuts along Main Street and three (3) full movement curb cuts along Washington Street. The bank project will modify two (2) of the existing curb cuts and remove the other two (2) curb cuts. The curb cuts being removed are located closest to the intersection of Main Street and Washington Street. The curb cut along Washington Street for the abutting residential parcel will remain. The two proposed curb cuts will both allow for right-in right-out turning movements.

There are a total of 15 parking spaces being proposed as part of this development, four (4) more than the minimum required by the Town of Reading Zoning Code. The site plans also indicate a proposed 12'x35' loading area within the drive-aisle. It is unlikely that a large truck will be delivering supplies to this branch location. Any deliveries, including armored transportation for cash pickups, will likely utilize an onsite parking stall.

Please also refer to the Traffic Impact Study prepared by McMahon included in the submittal package.

## Trash Removal:

This location will not contain a trash enclosure. All trash removal will be handled via a private trash removal company for security reasons.

## Resource Areas:

There are no resource areas located within the parcel limits.

## Construction Impacts & Schedule:

All construction activities will be limited to within the parcel limits with the exception of any utility connections and street improvements.

Construction is proposed to begin early 2024 with a potential opening of Fall 2024.

# **ABUTTERS LISTS**



**TOWN OF READING**

**REQUEST FOR CERTIFIED ABUTTERS LIST**

**SUBJECT PROPERTY:**

ADDRESS: 431 Main Street

Assessors' Map Number: 17 Lot Number: 63 & 65

**APPLICANT/AGENT:**

Name: Bohler - Tina Castelli

Address: 352 Turnpike Road, Southborough, MA 01772

Telephone: 508-480-9900 Email: tcastelli@bohlereng.com

**Board or Commission for which this request is made (check all that are applicable):**

**Community Planning and Development Commission:**

- Site Plan Review
- Special Permit
- Subdivision

**Conservation Commission:**

- Request for Determination
- Abbreviated Notice of Resource Area Delineation
- Notice of Intent

**Zoning Board of Appeals:**

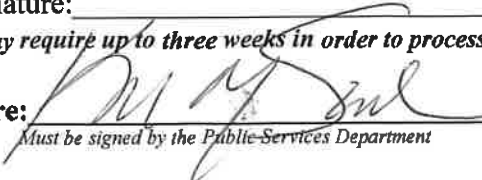
- Appeal
- Special Permit
- Variance

- Health Department
- Historic District Commission
- Historical Commission
- Other: \_\_\_\_\_

**Brief description of request:** Abutters list request for Planning Board - Site Plan Review

Applicant/Agent Signature: \_\_\_\_\_ Date: \_\_\_\_\_

*The Assessors' Office may require up to three weeks in order to process and approve this request.*

Authorized Signature:  Date: 12/15/23

*Must be signed by the Public Services Department*

**TOWN OF READING**

**REQUEST FOR CERTIFIED ABUTTERS LIST**

**SUBJECT PROPERTY:**

ADDRESS: 167 Washington Street

Assessors' Map Number: 17 Lot Number: 65

**APPLICANT/AGENT:**

Name: Bohler - Tina Castelli

Address: 352 Turnpike Road, Southborough, MA 01772

Telephone: 508-480-9900 Email: tcastelli@bohlereng.com

**Board or Commission for which this request is made (check all that are applicable):**

**Community Planning and Development Commission:**

- Site Plan Review
- Special Permit
- Subdivision

**Conservation Commission:**

- Request for Determination
- Abbreviated Notice of Resource Area Delineation
- Notice of Intent

**Zoning Board of Appeals:**

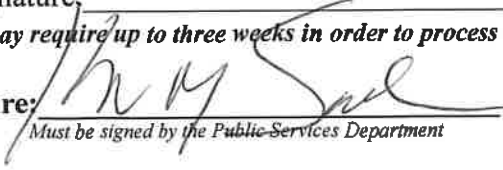
- Appeal
- Special Permit
- Variance

- Health Department
- Historic District Commission
- Historical Commission
- Other: \_\_\_\_\_

**Brief description of request:** Abutters list request for Planning Board - Site Plan Review

Applicant/Agent Signature: \_\_\_\_\_ Date: \_\_\_\_\_

*The Assessors' Office may require up to three weeks in order to process and approve this request.*

Authorized Signature:  Date: 1/5/23

*Must be signed by the Public Services Department*



**TOWN OF READING**  
**16 LOWELL STREET**  
**READING, MA 01867-2693**

**BOARD OF ASSESSORS**  
**781-942-9027**  
**FAX: 781-942-9037**

---

**ABUTTERS LIST**  
**CERTIFICATION**

**FOR BOARD OF ASSESSORS**

**VICTOR P. SANTANIELLO, CHIEF APPRAISER** **DATE**

  
**PHILIP CANNIFF, ASSISTANT APPRAISER**

**1/5/2023**  
**DATE**





**TOWN OF READING  
16 LOWELL STREET  
READING, MA 01867-2693**

**BOARD OF ASSESSORS**

**TEL.: 781-942-9027**

**FAX: 781-942-9037**

---

**July 27, 2021**

**To whom it may concern;**

**In an effort to streamline our business practices and desire to decrease turnaround time for taxpayers and other municipal departments, please be advised that effective this date, we the Board of Assessors for the Town of Reading Hereby delegate to the Town Appraiser of the Assessing Department signatory authority of all certified abutter's lists as compiled by the department.**

**Sincerely,**

**Reading Board of Assessors**

  
**Cheryl Moschella**

  
**Michael E. Golden**

  
**Brendan Zarechian**

BOISVERT MARCEL P ETAL TRS THE 161 ASH  
STREET REALTY TRUST  
161 ASH STREET  
READING, MA 01867

GRAY CHARLES W SUSAN GRAY  
15 HERITAGE LN  
LYNNFIELD, MA 01940

KROL ERIN  
171 WASHINGTON ST  
READING, MA 01867

413 MAIN STREET LLC  
10 JEAN AVE #2  
CHELMSFORD , MA 01824

CATALFAMO GARY  
459 MAIN ST  
READING, MA 01867

CARPENELLA MICHAEL A  
46 TAMARACK RD  
READING, MA 01867

MANNING GARY R DENISE E MANNING  
71 GREEN ST  
READING, MA 01867

JOHNSON BRUCE D ETAL GREGORY D JOHNSON  
ETAL  
166 WASHINGTON ST  
READING, MA 01867

FAULKNER BURTON F JR C/O MCDONALDS CORP  
20-0015  
10 JEAN AVE #2  
CHELMSFORD, MA 01824

MCGILVRAY JOSEPH III DANIELA MCGILVRAY  
182 WASHINGTON ST  
READING, MA 01867

TOWN OF READING PARK  
16 LOWELL ST  
READING, MA 01867

TOWER KEITH M SUSAN M AHERN  
175 WASHINGTON ST  
READING, MA 01867

S & S FAB LLC  
159 ASH STREET  
READING, MA 01867

DAO PHUONG N NGUYEN HAI T  
8 BOLTON ST  
READING, MA 01867

RPB PROPERTIES INC  
600 SHIRLEY ST  
WINTHROP, MA 02152

BACCI CARLO TRUSTEE ASB REALTY TRUST  
494 MAIN ST  
READING, MA 01867

S AND S FAB LLC  
159 ASH ST  
READING, MA 01867

MOORE CHRISTINA S  
75 GREEN ST UNIT 2  
READING, MA 01867

AJM REALTY LLC  
143 WASHINGTON ST  
READING, MA 01867

SINGH HARMINDER KAUR RAJWINDER  
174 WASHINGTON ST UNIT 1  
READING, MA 01867

VAIL THOMAS R  
4 BOLTON ST  
READING , MA 01867

PATEL AMI K  
75 GREEN ST UNIT 1  
READING, MA 01867

484 MAIN STREET LLC  
21 BALDWIN LANE  
READING, MA 01867

SUMNER NEIL J ETAL TRUSTEES SUMNER FAMILY  
REV TRUST  
12 BOLTON ST  
READING, MA 01867

454 MAIN STREET REALTY LLC  
452-454 MAIN ST  
READING, MA 01867

HIRST JONATHAN D HIRST HOLLY A TE  
183 WASHINGTON ST  
READING, MA 01867

TORRES AXEL J VIGO OTERO CARLA D  
75 GREEN ST UNIT 4  
READING, MA 01867

GOODRIDGE BARBARA B ETAL LE GOODRIDGE  
IRREVOCABLE TRUST  
20 BOLTON STREET  
READING, MA 01867

RICHARDS MICHAEL F RICHARDS JUDITH A TE  
50 FOREST ST  
READING, MA 01867

TRAINO JENNIFER  
400 MAIN ST  
READING , MA 01867

AKM CORP C/O WALGREENS  
P O BOX 1159  
DEERFIELD, IL 60015

TD BANK ATTN: LEASE & TAX ADMIN DEPT  
380 WELLINGTON ST-TOWER B-10TH FL  
LONDON ONTARIO, N6A 4S4 CANADA

VOZZELLA MARIO  
179 WASHINGTON ST  
READING, MA 01867

BM VENTURES LLC C/O CHARLES GATE PRY MGMT  
LLC  
867 BOYLSTON ST 3RD FL  
BOSTON, MA 02116

VINCIARELLI ANTHONY NELSON VINCIARELLI  
CANNATA ANDREA E  
114 ASH ST  
READING, MA 01867

FODERA MARIA A TRUSTEE WASHINGTONCIMA  
REALTY TRUST  
147 SANBORN LANE  
READING, MA 01867

SVENSSON ROBERT LOMBARDO PORTIA TE  
176 WASHINGTON ST UNIT 2  
READING, MA 01867

WASH DEPOT 1, INC C/O WASH DEPOT HOLDINGS  
2400 EAST COMMERCIAL BLVD SUITE 901  
FORT LAUDERDALE, FL 33308

DEPOT APARTMENTS LLC  
2 IRIS COURT STE 8  
ACTON, MA 01720

DEPOT APARTMENTS LLC  
2 IRIS COURT STE 8  
ACTON, MA 01720

DEPOT APARTMENTS LLC  
2 IRIS COURT STE 8  
ACTON, MA 01720

DEPOT APARTMENTS LLC  
2 IRIS COURT STE 8  
ACTON, MA 01720

PELEDGE JUSTIN PATRICK PELEDGE KRISTIN MARY  
TE  
16 BOLTON ST  
READING, MA 01867

DUBREUIL MATTHEW SYE KAYLEE JTROS  
75 GREEN ST UNIT 3  
READING, MA 01867



BOISVERT MARCEL P ETAL TRS THE 161 ASH  
STREET REALTY TRUST  
161 ASH STREET  
READING, MA 01867

GRAY`S MAIN & WASHINGTON LLC  
15 HERITAGE LN  
LYNNFIELD, MA 01940

KROL ERIN  
171 WASHINGTON ST  
READING, MA 01867

413 MAIN STREET LLC  
10 JEAN AVE #2  
CHELMSFORD , MA 01824

CATALFAMO GARY  
459 MAIN ST  
READING, MA 01867

CARPENELLA MICHAEL A  
46 TAMARACK RD  
READING, MA 01867

MANNING GARY R DENISE E MANNING  
71 GREEN ST  
READING, MA 01867

JOHNSON BRUCE D ETAL GREGORY D JOHNSON  
ETAL  
166 WASHINGTON ST  
READING, MA 01867

FAULKNER BURTON F JR C/O MCDONALDS CORP  
20-0015  
10 JEAN AVE #2  
CHELMSFORD, MA 01824

NAPOLI ILLEANA  
22 BOLTON ST  
READING, MA 01867

MCGILVRAY JOSEPH III DANIELA MCGILVRAY  
182 WASHINGTON ST  
READING, MA 01867

TOWN OF READING PARK  
16 LOWELL ST  
READING, MA 01867

TOWER KEITH M SUSAN M AHERN  
175 WASHINGTON ST  
READING, MA 01867

S & S FAB LLC  
159 ASH STREET  
READING, MA 01867

DAO PHUONG N NGUYEN HAI T  
8 BOLTON ST  
READING, MA 01867

RPB PROPERTIES INC  
600 SHIRLEY ST  
WINTHROP, MA 02152

S AND S FAB LLC  
159 ASH ST  
READING, MA 01867

MOORE CHRISTINA S  
75 GREEN ST UNIT 2  
READING, MA 01867

WROBEL JACEK K  
188 WASHINGTON ST  
READING, MA 01867

SINGH HARMINDER KAUR RAJWINDER  
174 WASHINGTON ST UNIT 1  
READING, MA 01867

VAIL THOMAS R  
4 BOLTON ST  
READING , MA 01867

PATEL AMI K  
75 GREEN ST UNIT 1  
READING, MA 01867

484 MAIN STREET LLC  
21 BALDWIN LANE  
READING, MA 01867

SUMNER NEIL J ETAL TRUSTEES SUMNER FAMILY  
REV TRUST  
12 BOLTON ST  
READING, MA 01867

454 MAIN STREET REALTY LLC  
452-454 MAIN ST  
READING, MA 01867

HIRST JONATHAN D HIRST HOLLY A TE  
183 WASHINGTON ST  
READING, MA 01867

TORRES AXEL J VIGO OTERO CARLA D  
75 GREEN ST UNIT 4  
READING, MA 01867

GOODRIDGE BARBARA B ETAL LE GOODRIDGE  
IRREVOCABLE TRUST  
20 BOLTON STREET  
READING, MA 01867

KANTHARAJ KRITHICA HARIKA GURSHER  
24 BOLTON ST  
READING, MA 01867

RICHARDS MICHAEL F RICHARDS JUDITH A TE  
50 FOREST ST  
READING, MA 01867

TRAINO JENNIFER  
400 MAIN ST  
READING , MA 01867

AKM CORP C/O WALGREENS  
P O BOX 1159  
DEERFIELD, IL 60015

AKM CORP C/O WALGREENS CO  
P O BOX 1159  
DEERFIELD, IL 60015

TD BANK ATTN: LEASE & TAX ADMIN DEPT  
380 WELLINGTON ST-TOWER B-10TH FL  
LONDON ONTARIO, N6A 4S4 CANADA

VOZZELLA MARIO  
179 WASHINGTON ST  
READING, MA 01867

BM VENTURES LLC C/O CHARLESGATE PRTY MGMT  
LLC  
867 BOYLSTON ST 3RD FL  
BOSTON, MA 02116

FODERA MARIA A TRUSTEE WASHINGTONCIMA  
REALTY TRUST  
147 SANBORN LANE  
READING, MA 01867

SVENSSON ROBERT LOMBARDO PORTIA TE  
176 WASHINGTON ST UNIT 2  
READING, MA 01867

GARDINER NORMA E ETAL TRUSTEES NORMA E  
GARDINER REV TRUST  
185 WASHINGTON ST  
READING, MA 01867

PELEDGE JUSTIN PATRICK PELEDGE KRISTIN MARY  
TE  
16 BOLTON ST  
READING, MA 01867

DUBREUIL MATTHEW SYE KAYLEE JTROS  
75 GREEN ST UNIT 3  
READING, MA 01867



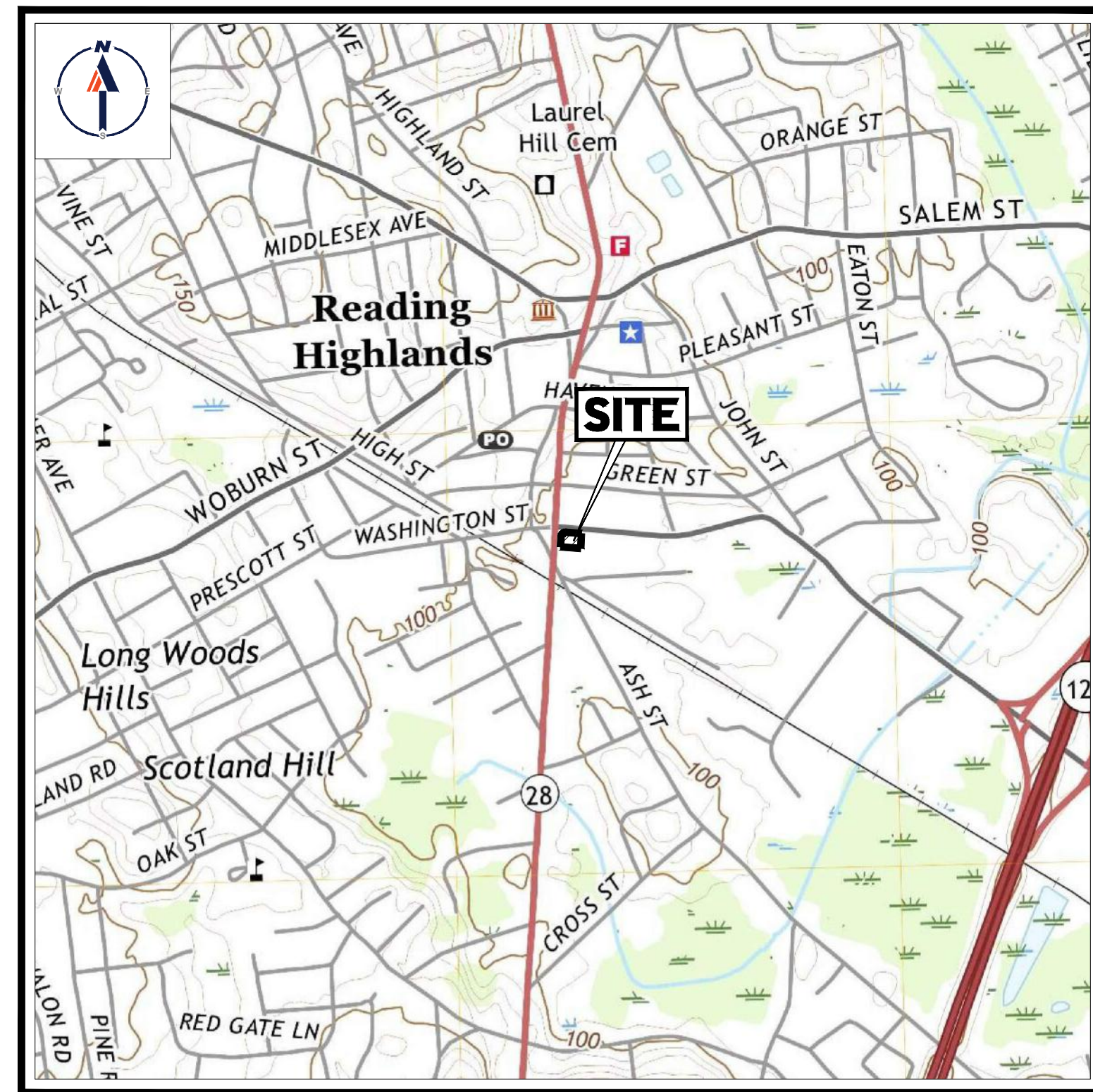
# PROPOSED SITE PLAN DOCUMENTS

FOR



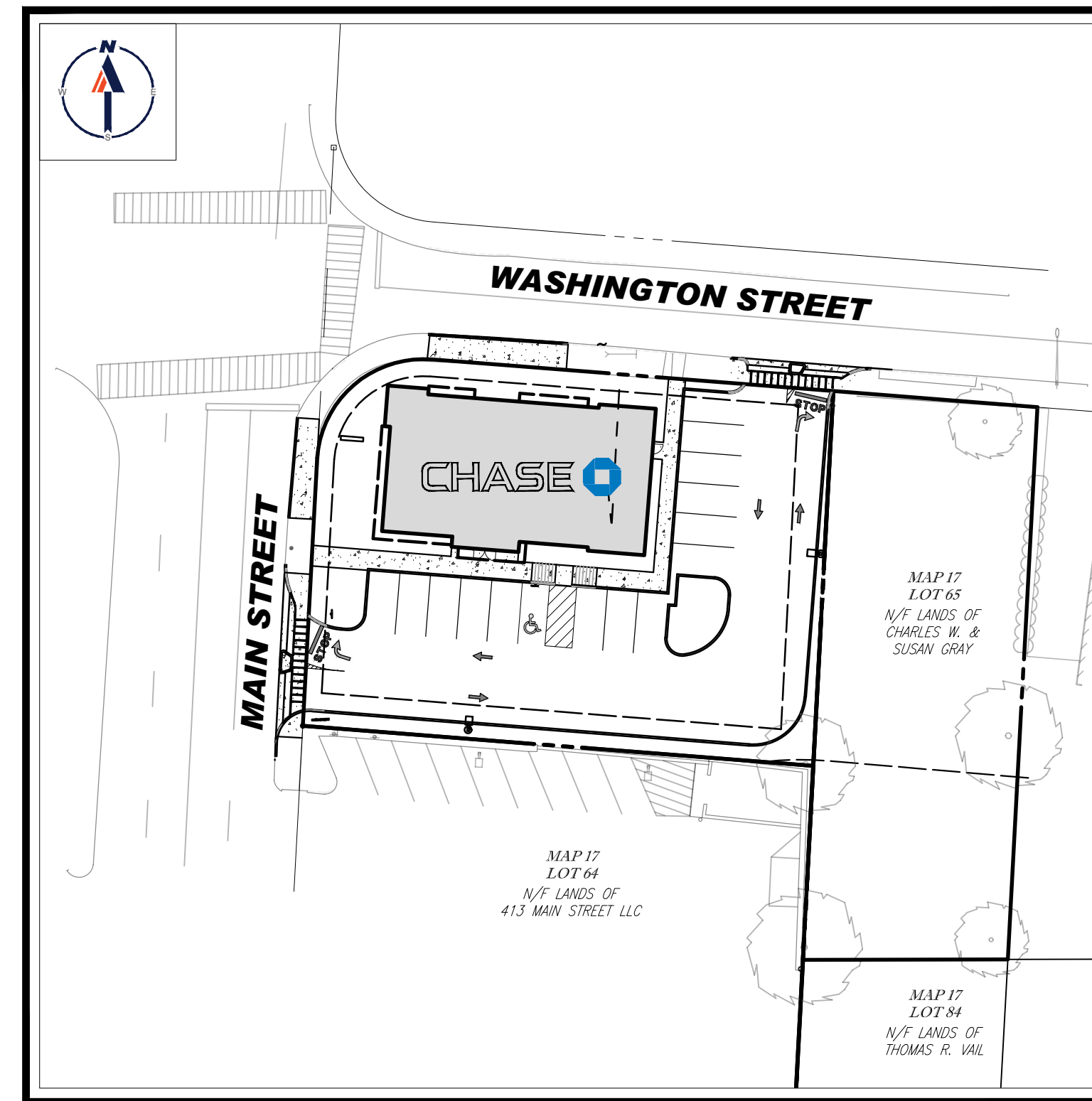
## PROPOSED BANK DEVELOPMENT

LOCATION OF SITE:  
 431 MAIN STREET, TOWN OF READING  
 MIDDLESEX COUNTY, MASSACHUSETTS  
 MAP #17, LOT #63



USGS MAP

SCALE: 1" = 1,000'  
 SOURCE: READING MASSACHUSETTS USGS QUADRANGLE



SITE MAP

SCALE: 1" = 60'

### DRAWING SHEET INDEX

| SHEET INDEX  |         |
|--|---------|
| SHEET TITLE  | NUMBER  |
| COVER SHEET  | C-101   |
| GENERAL NOTES SHEET                                | C-102   |
| DEMOLITION PLAN                                    | C-201   |
| SITE LAYOUT PLAN                                   | C-301   |
| GRADING & DRAINAGE PLAN                            | C-401   |
| UTILITY PLAN                                       | C-501   |
| SOIL EROSION & SEDIMENT CONTROL PLAN               | C-601   |
| SOIL EROSION & SEDIMENT CONTROL NOTES & DETAILS    | C-602   |
| LANDSCAPE PLAN                                     | C-701   |
| LANDSCAPE NOTES & DETAILS                          | C-702   |
| LIGHTING PLAN                                      | C-703   |
| DETAIL SHEET                                       | C-901   |
| DETAIL SHEET                                       | C-902   |
| DETAIL SHEET                                       | C-903   |
| REFERENCE PLANS                                    |         |
| BOUNDARY, TOPOGRAPHIC & UTILITY SURVEY (BY OTHERS) | 1 SHEET |

**BOHLER**  
 SITE CIVIL AND CONSULTING ENGINEERING  
 PROGRAM MANAGEMENT  
 LANDSCAPE ARCHITECTURE  
 SUSTAINABLE DESIGN  
 PERMITTING SERVICES  
 TRANSPORTATION SERVICES

**REVISIONS**

| REV | DATE       | COMMENT           | CHECKED BY | DRAWN BY |
|-----|------------|-------------------|------------|----------|
| 1   | 04/03/2023 | PER TOWN COMMENTS | JJ         | JF       |

**811**  
 Know what's below.  
 Call before you dig.  
 ALWAYS CALL 811  
 It's fast. It's free. It's the law.

**PERMIT SET**

THIS DRAWING IS INTENDED FOR MUNICIPAL AND/OR AGENCY REVIEW AND APPROVAL. IT IS NOT INTENDED AS A CONSTRUCTION DOCUMENT UNLESS INDICATED OTHERWISE.

PROJECT No.: MAA220275.00  
 DRAWN BY: CFD/JRJ  
 CHECKED BY: JF/RMM  
 DATE: 04/03/2023  
 CAD ID: MAA220275.00-SPPD-08

**PROPOSED SITE PLAN DOCUMENTS**

FOR



PROPOSED BANK DEVELOPMENT  
 MAP: 17 LOT: 63  
 431 MAIN STREET,  
 TOWN OF READING,  
 MIDDLESEX COUNTY,  
 MASSACHUSETTS



352 TURNPIKE ROAD  
 SOUTHBOROUGH, MA 01772  
 Phone: (508) 480-9900  
[www.BohlerEngineering.com](http://www.BohlerEngineering.com)

SHEET TITLE:  
**COVER SHEET**

SHEET NUMBER:  
**C-101**

REVISION 1 - 04/03/2023

PREPARED BY



P:\2022\MAA220275.00\CAD\DRAWINGS\PLAN SET\CIVIL\SITE PLANS\MAA220275.00-SPPD-08.dwg - LAYOUT: C-101-COVER



## GENERAL NOTES

1. THESE PLANS ARE SOLELY BASED ON INFORMATION THE OWNER AND OTHERS PROVIDED TO BOHLER ENGINEERING, (HEREIN "BOHLER") PRIOR TO THE DATE ON WHICH THE ENGINEER OF RECORD AND BOHLER PREPARED THESE PLANS. THE CONTRACTOR MUST FIELD VERIFY ALL EXISTING CONDITIONS AND IMMEDIATELY NOTIFY BOHLER, IN WRITING, OF ANY ACTUAL, SITE CONDITIONS DIFFER FROM THOSE SHOWN ON THESE PLANS, OR IF THE PROPOSED WORK CONFLICTS WITH ANY OTHER SITE FEATURES.
2. THE CONTRACTOR MUST STRICTLY COMPLY WITH THESE NOTES AND ALL SPECIFICATIONS/REPORTS CONTAINED HEREIN. THE CONTRACTOR MUST ENSURE THAT ALL SUBCONTRACTORS FULLY AND COMPLETELY CONFORM TO AND COMPLY WITH THESE REQUIREMENTS, THESE NOTES, AND THE REQUIREMENTS AND CONDITIONS OF THE NOTATION DRAWINGS. ADDITIONAL NOTES AND SPECIFICATIONS ARE LOCATED THROUGHOUT THESE PLANS. GENERAL NOTE SPECIFIC PLAN NOTES MAY BE FOUND ON THE INDIVIDUAL PLANS. THESE GENERAL NOTES APPLY TO THIS ENTIRE DOCUMENT PACKAGE. IT IS THE CONTRACTORS RESPONSIBILITY TO REVIEW ALL CONSTRUCTION CONTRACT DOCUMENTS INCLUDING, BUT NOT LIMITED TO, ALL OF THE DRAWINGS AND SPECIFICATIONS ASSOCIATED WITH THIS PROJECT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FOR THIS PROJECT.

PRIOR TO THE COMMENCEMENT OF CONSTRUCTION, THE CONTRACTOR MUST CONFIRM WITH THE ENGINEER OF RECORD AND BOHLER THAT THE LATEST EDITION OF THE DOCUMENTS AND/OR REPORTS REFERENCED WITHIN THE PLAN REFERENCES ARE BEING USED FOR CONSTRUCTION. THIS IS THE CONTRACTORS SOLE AND COMPLETE RESPONSIBILITY.

PRIOR TO THE COMMENCEMENT OF CONSTRUCTION, THE CONTRACTOR MUST ENSURE THAT ALL REQUIRED PERMITS AND APPROVALS HAVE BEEN OBTAINED. NO CURRENT ARCHITECTURAL, CIVIL AND STRUCTURAL CONSTRUCTION DOCUMENTS (INCLUDING, BUT NOT LIMITED TO, MECHANICAL, ELECTRICAL, PLUMBING AND FIRE SUPPRESSION PLANS, WHERE APPLICABLE), THE CONTRACTOR MUST IMMEDIATELY NOTIFY OWNER, ARCHITECT AND ENGINEER OF RECORD AND BOHLER, IN WRITING, OF ANY CONFLICTS, DISCREPANCIES OR AMBIGUITIES WHICH EXIST BETWEEN THESE PLANS AND ANY OTHER PLANS THAT COMPRISE THE CONSTRUCTION DOCUMENTS.

THE CONTRACTOR MUST ENSURE THAT ALL WORK IS PERFORMED IN ACCORDANCE WITH THESE PLANS, SPECIFICATIONS/REPORTS AND CONDITIONS OF APPROVAL AND ALL APPLICABLE REQUIREMENTS, RULES, REGULATIONS, ORDINANCES AND STANDARDS OF ALL GOVERNMENTAL AND LOCAL JURISDICTIONAL ENTITIES WITH JURISDICTION OVER THIS PROJECT, AND ALL PROVISIONS IN AND CONDITIONS OF THE CONSTRUCTION CONTRACT WITH THE OWNER/DEVELOPER INCLUDING ALL EXHIBITS, ATTACHMENTS AND ADDENDA TO SAME.

PRIOR TO THE COMMENCEMENT OF CONSTRUCTION, THE CONTRACTOR MUST COORDINATE THE BUILDING LAYOUT BY CAREFULLY REVIEWING OR THE CURRENT ARCHITECTURAL, CIVIL AND STRUCTURAL CONSTRUCTION DOCUMENTS (INCLUDING, BUT NOT LIMITED TO, MECHANICAL, ELECTRICAL, PLUMBING AND FIRE SUPPRESSION PLANS, WHERE APPLICABLE), THE CONTRACTOR MUST IMMEDIATELY NOTIFY OWNER, ARCHITECT AND ENGINEER OF RECORD AND BOHLER, IN WRITING, OF ANY CONFLICTS, DISCREPANCIES OR AMBIGUITIES WHICH EXIST BETWEEN THESE PLANS AND ANY OTHER PLANS THAT COMPRISE THE CONSTRUCTION DOCUMENTS.

THE CONTRACTOR MUST REFER TO AND ENSURE COMPLIANCE WITH THE APPROVED ARCHITECTURAL/BUILDING PLANS FOR RECORD FOR EXACT LOCATIONS AND DIMENSIONS OF ENTRY POINTS, ELEVATIONS, PRECISE BUILDING DIMENSIONS, AND EXACT BUILDING UTILITY LOCATIONS.

THE CONTRACTOR MUST FIELD VERIFY ALL DIMENSIONS AND MEASUREMENTS SHOWN ON THESE PLANS, PRIOR TO THE COMMENCEMENT OF CONSTRUCTION. THE CONTRACTOR MUST IMMEDIATELY NOTIFY ENGINEER OF RECORD AND BOHLER, IN WRITING, IF ANY CONFLICTS, DISCREPANCIES, OR AMBIGUITIES EXIST PRIOR TO PROCEEDING WITH THE WORK. THE CONTRACTOR MUST FIELD VERIFY ALL DIMENSIONS AND MEASUREMENTS SHOWN ON THESE PLANS, PRIOR TO REPAIRED DUE TO DIMENSIONS, MEASUREMENTS OR GRADES SHOWN INCORRECTLY ON THESE PLANS PRIOR TO BOTH (A) THE CONTRACTOR GIVING ENGINEER OF RECORD AND BOHLER WRITTEN NOTIFICATION OF SAME AND (B) ENGINEER OF RECORD AND BOHLER, THEREAFTER, PROVIDING THE CONTRACTOR WITH WRITTEN AUTHORIZATION TO PROCEED WITH SUCH ADDITIONAL WORK.

THE CONTRACTOR MUST VERIFY ALL DIMENSIONS AND MEASUREMENTS INCLUDED ON DESIGN DOCUMENTS HEREIN AND MUST NOT SCALE OFF THE DRAWINGS DUE TO POTENTIAL PRINTING INACCURACIES. ALL DIMENSIONS AND MEASUREMENTS ARE TO BE CHECKED AND CONFIRMED BY THE GENERAL CONTRACTOR PRIOR TO PREPARATION OF SHOP DRAWINGS, FABRICATION/ORDERING OF PARTS AND MATERIALS AND COMMENCEMENT OF SITE WORK. SITE PLAN DRAWINGS ARE INTENDED AS SURVEY DOCUMENTS. DIMS. AND DIMENSIONS SUPERSEDES GRAPHICAL REPRESENTATIONS. THE CONTRACTOR MUST MAKE CONTRACTOR OWN MEASUREMENTS FOR LAYOUT OF IMPROVEMENTS.

THE OWNER AND CONTRACTOR MUST BE FAMILIAR WITH AND RESPONSIBLE FOR THE PROCUREMENT OF ANY AND ALL CERTIFICATIONS REQUIRED FOR THE ISSUANCE OF A CERTIFICATE OF OCCUPANCY.

WHEN INCLUDED AS ONE OF THE REFERENCED DOCUMENTS, THE GEOTECHNICAL REPORT, SPECIFICATIONS AND RECOMMENDATIONS SET FORTH THEREIN ARE A PART OF THESE PLANS AND, IN CASE OF CONFLICT, DISCREPANCY OR AMBIGUITY, THE MORE STRINGENT AND/OR RECOMMENDATIONS SHALL PREVAIL. THE CONTRACTOR MUST ENSURE THAT ALL REQUIREMENTS AND RECOMMENDATIONS CONTAINED IN (A) THE PLANS, AND (B) THE GEOTECHNICAL REPORT AND RECOMMENDATIONS, MUST TAKE PRECEDENCE OVER ANY SPECIFICALLY NOTED OTHERWISE ON THE PLANS. THE CONTRACTOR MUST NOTIFY THE ENGINEER OF RECORD AND BOHLER, IN WRITING, OF ANY SUCH CONFLICT, DISCREPANCY OR AMBIGUITY BETWEEN THE PLANS AND SPECIFICATIONS, PRIOR TO PROCEEDING WITH ANY FURTHER WORK. IF A GEOTECHNICAL REPORT WAS NOT CREATED, THEN THE CONTRACTOR MUST FOLLOW AND COMPLY WITH ALL OF THE REQUIREMENTS OF ANY AND ALL MUNICIPAL, COUNTY, STATE, AND FEDERAL LAWS AND APPLICABLE SPECIFICATIONS WHICH HAVE JURISDICTION OVER THIS PROJECT.

ENGINEER OF RECORD AND BOHLER ARE NEITHER LIABLE NOR RESPONSIBLE FOR ANY SUBSURFACE CONDITIONS AND FURTHER, HAS NO LIABILITY FOR ANY HAZARDOUS MATERIALS, HAZARDOUS WASTES, OR POLLUTANTS ON, ABOUT OR UNDER THE PROPERTY.

THE CONTRACTOR IS RESPONSIBLE FOR IDENTIFYING WHEN AND WHERE SHORING IS REQUIRED AND FOR INSTALLING ALL SHORING REQUIRED DURING EXCAVATION (TO BE PERFORMED IN ACCORDANCE WITH CURRENT OSHA STANDARDS) AND ANY ADDITIONAL PRECAUTIONS TO BE TAKEN TO ASSURE THE STABILITY OF ADJACENT, NEARBY AND CONTIGUOUS STRUCTURES AND PROPERTIES. ALL OF THIS WORK IS TO BE PERFORMED AT CONTRACTORS SOLE COST AND EXPENSE.

THE CONTRACTOR MUST EXERCISE EXTREME CAUTION WHEN PERFORMING ANY WORK ACTIVITIES ADJACENT TO PAVEMENT, STRUCTURES, ETC. WHICH ARE TO REMAIN EITHER FOR AN INITIAL PHASE OF THE PROJECT OR AS PART OF THE FINAL CONSTRUCTION. THE CONTRACTOR IS RESPONSIBLE FOR TAKING ALL APPROPRIATE MEASURES REQUIRED TO ENSURE THE STRUCTURAL STABILITY OF SIDEWALKS AND PAVEMENT, UTILITIES, BUILDINGS, AND INFRASTRUCTURE WHICH ARE TO REMAIN, AND TO PROTECT AND MAINTAIN THE EXISTING UTILITIES AND SERVICES WITHIN THE PROJECT LIMITS.

DEBRIS MUST NOT BE BURIED ON THE SUBJECT SITE. ALL DEMOLITION AND CONSTRUCTION WASTES, UNSUITABLE EXCAVATED MATERIAL, EXCESS SOILS AND DEBRIS (SOLID WASTE) MUST BE DISPOSED OF IN ACCORDANCE WITH THE REQUIREMENTS OF ANY AND ALL MUNICIPAL, COUNTY, STATE, AND FEDERAL LAWS AND APPLICABLE CODES WHICH HAVE JURISDICTION OVER THIS PROJECT OR OVER THE CONTRACTOR.

IF IT IS THE CONTRACTORS SOLE RESPONSIBILITY TO MAINTAIN RECORDS TO DEMONSTRATE PROPER AND FULLY COMPLIANT DISPOSAL ACTIVITIES, TO BE PROMPTLY PROVIDED TO THE OWNER UPON REQUEST.

THE CONTRACTOR MUST REPAIR, AT CONTRACTORS SOLE COST, ALL DAMAGE DONE TO ANY NEW OR EXISTING CONSTRUCTION OR PROPERTY DURING THE COURSE OF CONSTRUCTION, INCLUDING, BUT NOT LIMITED TO, DAMAGE TO UTILITIES, PAVEMENT, CURBS, ETC. AND MUST BEAR ALL COSTS ASSOCIATED WITH SAME TO INCLUDE, BUT NOT BE LIMITED TO, REVISION, RE-SURVEY, RE-PERMITTING AND CONSTRUCTION. THE CONTRACTOR IS RESPONSIBLE FOR AND MUST REPAIR ALL SIGN, INTERSECTION, CABLE, WIRING CONDITIONS, AND ANY UNDERGROUND ACCESSORY EQUIPMENT DAMAGED DURING CONSTRUCTION AND MUST BE RESPONSIBLE FOR THE REPAIR OF ANY SUCH DAMAGE TO EXISTING CONSTRUCTION OR PROPERTY. THE CONTRACTOR MUST RESTORE SUCH CONSTRUCTION OR PROPERTY TO A CONDITION EQUIVALENT TO OR BETTER THAN THE CONDITIONS PRIOR TO COMMENCEMENT OF THE CONSTRUCTION, AND ALL APPLICABLE FEDERAL, STATE AND LOCAL REGULATIONS, RULES, REQUIREMENTS, STATUTES, ORDINANCES AND STATUTES.

THE CONTRACTOR MUST BEAR ALL COSTS ASSOCIATED WITH SAME. THE CONTRACTOR MUST PROMPTLY DOCUMENT ALL EXISTING DAMAGE AND NOTIFY, IN WRITING, THE OWNER AND THE CONSTRUCTION MANAGER PRIOR TO THE START OF CONSTRUCTION.

THE ENGINEER OF RECORD AND BOHLER ARE NOT AND HAVE NO CONTRACTUAL, LEGAL, OR ANY OTHER RESPONSIBILITIES FOR JOB SITE SAFETY. THE CONTRACTOR MUST BE RESPONSIBLE FOR JOB SITE SAFETY. THE ENGINEER OF RECORD AND BOHLER ARE NOT BEING RETAINED FOR OR HAVE ANY LIABILITY FOR OR BE RESPONSIBLE FOR JOB SITE SAFETY. SAME BEING WHOLLY OUTSIDE OF ENGINEER OF RECORDS AND BOHLERS SERVICES AS RELATED TO THE PROJECT. THE ENGINEER OF RECORD AND BOHLER ARE NOT RESPONSIBLE TO IDENTIFY OR REPORT ANY JOB SITE SAFETY ISSUES OR ANY JOB SITE CONDITIONS, AT ANY TIME.

THE CONTRACTOR MUST IMMEDIATELY IDENTIFY IN WRITING, TO THE ENGINEER OF RECORD AND BOHLER, ANY DISCREPANCIES THAT MAY OR COULD AFFECT THE PUBLIC SAFETY, HEALTH, OR PROTECT THE ENVIRONMENT. THE CONTRACTOR MUST IMMEDIATELY NOTIFY THE ENGINEER OF RECORD AND BOHLER, IN WRITING, OF ANY SUCH DISCREPANCIES AS DESCRIBED ABOVE. IT WILL BE AT THE CONTRACTORS OWN RISK AND, FURTHER, THE CONTRACTOR MUST INDEMNIFY, DEFEND AND HOLD HARMLESS THE ENGINEER OF RECORD AND BOHLER FOR ANY AND ALL DAMAGES, COSTS, INJURIES, ATTORNEYS FEES AND THE LIKE WHICH RESULT FROM OR ARE RELATED TO SUCH DISCREPANCIES, BUT NOT LIMITED TO, ANY THIS PARTY AND FIRST PARTY.

THE ENGINEER OF RECORD AND BOHLER ARE NOT RESPONSIBLE FOR ANY INJURY OR DAMAGES RESULTING FROM THE CONTRACTORS FAILURE TO BUILD OR CONSTRUCT IN STRICT ACCORDANCE WITH THE APPROVED PLANS, AND CURRENT CODES, RULES, STATUTES AND THE LIKE. IF THE CONTRACTOR AND/OR OWNER FAIL TO BUILD OR CONSTRUCT IN STRICT ACCORDANCE WITH APPROVED PLANS, RULES, STATUTES, CODES AND THE LIKE, THE CONTRACTOR AND/OR OWNER SHALL BE RESPONSIBLE FOR ALL DAMAGES, COSTS, INJURIES, ATTORNEYS FEES AND THE LIKE, AND SHALL BE RESPONSIBLE FOR HOLDING THE CONTRACTOR AND/OR OWNER HARMLESS FOR AND FROM ALL INJURIES, CLAIMS AND DAMAGES THAT ENGINEER AND BOHLER SUFFER AND ANY AND ALL COSTS THAT ENGINEER AND BOHLER INCUR AS RELATED TO SUCH DAMAGES.

ALL CONTRACTORS MUST CARRY AT LEAST THE MINIMUM AMOUNT OF THE SPECIFIED AND COMMERCIALY REASONABLE STATUTORY WORKERS COMPENSATION INSURANCE, EMPLOYERS LIABILITY INSURANCE AND COMMERCIAL GENERAL LIABILITY INSURANCE (INCLUDING, ALSO ALL UNEMPLOYMENT COVERS). ALL CONTRACTORS MUST HAVE THEIR COI POLICIES ENDORSED TO NAME BOHLER, AND ITS PAST, PRESENT AND FUTURE OWNERS, OFFICERS, DIRECTORS, PARTNERS, SHAREHOLDERS, MEMBERS, PRINCIPALS, COMMISSIONERS, AGENTS, SERVAANTS, AFFILIATES, SUBSIDIARIES, AND RELATED ENTITIES, AND ITS SUBCONTRACTORS AND SUBCONSULTANTS AS ADDITIONAL NAMED INSUREDS AND TO PROVIDE CONTRACTUAL LIABILITY COVERAGE SUFFICIENT TO INSURE (DEFEND, INDEMNIFY AND HOLD HARMLESS) AND INDEMNITY OBLIGATIONS ASSUMED AND AGREED TO BY THE CONTRACTOR HEREIN. ALL CONTRACTORS MUST SECURE AND MAINTAIN SUFFICIENT LIABILITY INSURANCE COVERS TO COVER THE CONTRACTORS OBLIGATIONS UNDER THESE PLANS. THE CONTRACTOR MUST SECURE AND MAINTAIN SUFFICIENT LIABILITY INSURANCE COVERAGES PRIOR TO COMMENCING ANY WORK AND UPON RENEWAL OF EACH POLICY DURING THE ENTIRE PERIOD OF CONSTRUCTION AND FOR TWO YEARS AFTER THE COMPLETION DATE, WHICHEVER IS LATER. IN ADDITION, ALL CONTRACTORS MUST SECURE AND MAINTAIN SUFFICIENT LIABILITY INSURANCE COVERAGES THAT THEY WILL TO THE FULLEST EXTENT PERMITTED UNDER THE LAW, INDEMNIFY, DEFEND AND HOLD HARMLESS BOHLER AND ITS PAST, PRESENT AND FUTURE OWNERS, OFFICERS, DIRECTORS, PARTNERS, SHAREHOLDERS, MEMBERS, PRINCIPALS, COMMISSIONERS, AGENTS, SERVAANTS, EMPLOYEES, AFFILIATES, SUBSIDIARIES, AND RELATED ENTITIES AND SUBCONSULTANTS FROM AND AGAINST ALL DAMAGES, INJURIES, CLAIMS, ACTIONS, PENALTIES, EXPENSES, PUNITIVE DAMAGES, TORT DAMAGES, STATUTORY CLAIMS, STATUTORY CAUSES OF ACTION, LOSSES, CAUSES OF ACTION, LIABILITIES OR COSTS, INCLUDING, ATTORNEYS FEES AND COSTS, ARISING OUT OF OR IN ANY WAY CONNECTED WITH OR RELATED TO THESE PLANS AND THE PROJECT, INCLUDING ALL CLAIMS BY EMPLOYEES OF THE CONTRACTORS, ALL CLAIMS BY THIRD PARTIES AND ALL CLAIMS RELATED TO THE PROJECT. THE CONTRACTOR MUST NOTIFY ENGINEER, IN WRITING, AT LEAST THIRTY (30) DAYS PRIOR TO ANY TERMINATION, SUSPENSION OR CHANGE OF ITS INSURANCE RETENTION.

THE ENGINEER OF RECORD AND BOHLER ARE NOT RESPONSIBLE FOR CONSTRUCTION METHODS, MEANS, TECHNIQUES OR PROCEDURES, GENERALLY OR FOR ANY CONFLICTS IN SCOPE AND REVISIONS THAT RESULT FROM SAME. THE CONTRACTOR IS FULLY AND SOLELY RESPONSIBLE FOR DETERMINING THE MEANS AND METHODS FOR COMPLETION OF THE WORK, PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.

NEITHER THE PROFESSIONAL ACTIVITIES OF BOHLER NOR THE PRESENCE OF BOHLER AND/OR ITS PAST, PRESENT AND FUTURE OWNERS, OFFICERS, DIRECTORS, PARTNERS, SHAREHOLDERS, MEMBERS, PRINCIPALS, COMMISSIONERS, AGENTS, SERVAANTS, EMPLOYEES, AFFILIATES, SUBSIDIARIES, AND RELATED ENTITIES, AND ITS SUBCONTRACTORS AND SUBCONSULTANTS AT A CONSTRUCTION/PROJECT SITE (HEREIN "BOHLER PARTIES"), RELIEVES OR WILL RELIEVE THE CONTRACTOR OF AND FROM CONSTRUCTION METHODS, MEANS, TECHNIQUES OR PROCEDURES NECESSARY FOR THE PROPER AND SAFE SUPERINTENDING AND COORDINATING THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND COMPLIANCE WITH ALL HEALTH AND SAFETY PRECAUTIONS REQUIRED BY ANY AND ALL APPLICABLE FEDERAL, STATE AND LOCAL REGULATIONS, RULES, REGULATIONS, STANDARDS AND THE LIKE. THE CONTRACTOR MUST EXERCISE ANY CONTROL OVER OR ANY RESPONSIBILITY FOR ANY CONSTRUCTION, THE CONTRACTOR OR ITS EMPLOYEES RELATING TO THEIR WORK AND ANY AND ALL HEALTH AND SAFETY PROGRAMS OR PROCEDURES. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR JOB SITE SAFETY. THE CONTRACTOR MUST INDEMNIFY, DEFEND, PROTECT AND HOLD HARMLESS BOHLER PARTIES FROM AND AGAINST ALL DAMAGES, INJURIES, CLAIMS, ACTIONS, PENALTIES, EXPENSES, PUNITIVE DAMAGES, TORT DAMAGES, STATUTORY CLAIMS, STATUTORY CAUSES OF ACTION, LOSSES, CAUSES OF ACTION, LIABILITIES OR COSTS, INCLUDING, ATTORNEYS FEES AND COSTS, ARISING OUT OF OR IN ANY WAY CONNECTED WITH OR RELATED TO THESE PLANS AND THE PROJECT, INCLUDING ALL CLAIMS BY EMPLOYEES OF THE CONTRACTORS, ALL CLAIMS BY THIRD PARTIES AND ALL CLAIMS RELATED TO THE PROJECT. THE CONTRACTOR MUST NOTIFY ENGINEER, IN WRITING, AT LEAST THIRTY (30) DAYS PRIOR TO ANY TERMINATION, SUSPENSION OR CHANGE OF ITS INSURANCE RETENTION.

THE ENGINEER OF RECORD AND BOHLER ARE NOT RESPONSIBLE FOR CONSTRUCTION METHODS, MEANS, TECHNIQUES OR PROCEDURES, GENERALLY OR FOR ANY CONFLICTS IN SCOPE AND REVISIONS THAT RESULT FROM SAME. THE CONTRACTOR IS FULLY AND SOLELY RESPONSIBLE FOR DETERMINING THE MEANS AND METHODS FOR COMPLETION OF THE WORK, PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.

NEITHER THE PROFESSIONAL ACTIVITIES OF BOHLER NOR THE PRESENCE OF BOHLER AND/OR ITS PAST, PRESENT AND FUTURE OWNERS, OFFICERS, DIRECTORS, PARTNERS, SHAREHOLDERS, MEMBERS, PRINCIPALS, COMMISSIONERS, AGENTS, SERVAANTS, EMPLOYEES, AFFILIATES, SUBSIDIARIES, AND RELATED ENTITIES, AND ITS SUBCONTRACTORS AND SUBCONSULTANTS AT A CONSTRUCTION/PROJECT SITE (HEREIN "BOHLER PARTIES"), RELIEVES OR WILL RELIEVE THE CONTRACTOR OF AND FROM CONSTRUCTION METHODS, MEANS, TECHNIQUES OR PROCEDURES NECESSARY FOR THE PROPER AND SAFE SUPERINTENDING AND COORDINATING THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND COMPLIANCE WITH ALL HEALTH AND SAFETY PRECAUTIONS REQUIRED BY ANY AND ALL APPLICABLE FEDERAL, STATE AND LOCAL REGULATIONS, RULES, REGULATIONS, STANDARDS AND THE LIKE. THE CONTRACTOR MUST EXERCISE ANY CONTROL OVER OR ANY RESPONSIBILITY FOR ANY CONSTRUCTION, THE CONTRACTOR OR ITS EMPLOYEES RELATING TO THEIR WORK AND ANY AND ALL HEALTH AND SAFETY PROGRAMS OR PROCEDURES. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR JOB SITE SAFETY. THE CONTRACTOR MUST INDEMNIFY, DEFEND, PROTECT AND HOLD HARMLESS BOHLER PARTIES FROM AND AGAINST ALL DAMAGES, INJURIES, CLAIMS, ACTIONS, PENALTIES, EXPENSES, PUNITIVE DAMAGES, TORT DAMAGES, STATUTORY CLAIMS, STATUTORY CAUSES OF ACTION, LOSSES, CAUSES OF ACTION, LIABILITIES OR COSTS, INCLUDING, ATTORNEYS FEES AND COSTS, ARISING OUT OF OR IN ANY WAY CONNECTED WITH OR RELATED TO THESE PLANS AND THE PROJECT, INCLUDING ALL CLAIMS BY EMPLOYEES OF THE CONTRACTORS, ALL CLAIMS BY THIRD PARTIES AND ALL CLAIMS RELATED TO THE PROJECT. THE CONTRACTOR MUST NOTIFY ENGINEER, IN WRITING, AT LEAST THIRTY (30) DAYS PRIOR TO ANY TERMINATION, SUSPENSION OR CHANGE OF ITS INSURANCE RETENTION.

WHEN IT IS CLEARLY AND SPECIFICALLY WITHIN BOHLERS SCOPE OF SERVICES CONTRACTED WITH THE OWNER/DEVELOPER, BOHLER WILL REVIEW OR TAKE OTHER APPROPRIATE ACTION ON THE CONTRACTOR SUBMITTALS SUCH AS SHOP DRAWINGS, PRELIMINARY REPORTS, AND OTHER DATA, WHICH THE CONTRACTOR IS REQUIRED TO SUBMIT, BUT ONLY FOR THE LIMITED PURPOSE OF EVALUATING CONFORMANCE WITH THE DESIGN INTENT AND THE INFORMATION SHOWN IN THE CONSTRUCTION CONTRACT DOCUMENTS. CONSTRUCTION MEANS AND METHODS AND TECHNIQUES OR PROCEDURES, COORDINATION OF THE WORK WITH OTHER TRADES, AND CONSTRUCTION SAFETY PRECAUTIONS ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND BOHLER HAS NO RESPONSIBILITY OR LIABILITY FOR SAME. BOHLER WILL PERFORM ITS SHOP DRAWING REVIEW WITH REASONABLE PROMPTNESS, AS CONDITIONS PERMIT, ANY DOCUMENT, DOCUMENTING BOHLERS REVIEW OF A SPECIFIC ITEM OR LIMITED SCOPE. IF THE CONTRACTOR HAS REVIEWED THE ENTIRE ASSEMBLY OF WHICH THE ITEM IS A COMPONENT, BOHLER IS NOT RESPONSIBLE FOR ANY DEVIATIONS FROM THE CONSTRUCTION DOCUMENTS. THE CONTRACTOR MUST, IN WRITING, PROMPTLY AND IMMEDIATELY BRING ANY DEVIATIONS TO THE ATTENTION OF THE ENGINEER OF RECORD AND BOHLER. BOHLER IS NOT REQUIRED TO REVIEW PARTIAL SUBMISSIONS OR THOSE FOR WHICH SUBMISSIONS OF CORRELATED ITEMS HAVE NOT BEEN RECEIVED.

IF THE CONTRACTOR DEVIATES FROM THESE PLANS AND/OR SPECIFICATIONS, INCLUDING THE NOTES CONTAINED HEREIN, WITHOUT FIRST OBTAINING THE PRIOR WRITTEN AUTHORIZATION OF THE ENGINEER OF RECORD AND BOHLER FOR ALL DEVIATIONS WITH ENGINEERS SOLE, THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE PAYMENT OF ALL DAMAGES, COSTS, INJURIES, ATTORNEYS FEES AND THE LIKE, AND SHALL BE RESPONSIBLE FOR HOLDING THE CONTRACTOR HARMLESS ASSESSED WITH RESPECT THERETO AND ALL COMPENSATORY OR PUNITIVE DAMAGES RESULTING THEREFROM AND, FURTHER, THE CONTRACTOR MUST INDEMNIFY, DEFEND, PROTECT AND HOLD HARMLESS THE ENGINEER OF RECORD AND BOHLER PARTIES TO THE FULLEST EXTENT PERMITTED UNDER THE LAW, FOR AND FROM ALL FEES, ATTORNEYS FEES, DAMAGES, COSTS, INJURIES, CLAIMS, ACTIONS, PENALTIES, EXPENSES, PUNITIVE DAMAGES, TORT DAMAGES, STATUTORY CLAIMS, STATUTORY CAUSES OF ACTION, LOSSES, CAUSES OF ACTION, LIABILITIES OR COSTS, ARISING OUT OF OR IN ANY WAY CONNECTED WITH OR RELATED TO THESE PLANS AND THE PROJECT, INCLUDING ALL CLAIMS BY EMPLOYEES OF THE CONTRACTORS, ALL CLAIMS BY THIRD PARTIES AND ALL CLAIMS RELATED TO THE PROJECT. THE CONTRACTOR MUST NOTIFY ENGINEER, IN WRITING, AT LEAST THIRTY (30) DAYS PRIOR TO ANY TERMINATION, SUSPENSION OR CHANGE OF ITS INSURANCE RETENTION.

THE CONTRACTOR IS RESPONSIBLE FOR A MAINTAINING AND PROTECTING THE TRAFFIC CONTROL PLAN AND ELEMENTS IN ACCORDANCE WITH FEDERAL, STATE, AND LOCAL REQUIREMENTS, FOR ALL WORK THAT AFFECTS PUBLIC TRAVEL EITHER IN THE RIGHT OF WAY OR ON SITE. THE COST FOR THIS ITEM MUST BE INCLUDED IN THE CONTRACTORS PRICE AND IS THE CONTRACTORS SOLE RESPONSIBILITY.

OWNER MUST MAINTAIN AND PRESERVE ALL PHYSICAL SITE FEATURES AND DESIGN FEATURES DEPICTED ON THE PLANS AND RELATED DOCUMENTS IN STRICT ACCORDANCE WITH THE APPROVED PLANS) AND DESIGN. AND FURTHER, THE ENGINEER OF RECORD AND BOHLER ARE NOT RESPONSIBLE FOR ANY FAILURE TO MAINTAIN OR PRESERVE SUCH FEATURES. IF OWNER FAILS TO MAINTAIN OR PRESERVE ALL PHYSICAL SITE FEATURES AND DESIGN FEATURES DEPICTED ON THE PLANS AND RELATED DOCUMENTS, OWNER AGREES TO INDEMNIFY AND HOLD THE ENGINEER OF RECORD AND BOHLER PARTIES HARMLESS FOR AND FROM ALL INJURIES, DAMAGES, COSTS, INJURIES, CLAIMS, ACTIONS, PENALTIES, EXPENSES, PUNITIVE DAMAGES, TORT DAMAGES, STATUTORY CLAIMS, STATUTORY CAUSES OF ACTION, LOSSES, CAUSES OF ACTION, LIABILITIES OR COSTS, ARISING OUT OF OR IN ANY WAY CONNECTED WITH OR RELATED TO THESE PLANS AND THE PROJECT, INCLUDING ALL CLAIMS BY EMPLOYEES OF THE CONTRACTORS, ALL CLAIMS BY THIRD PARTIES AND ALL CLAIMS RELATED TO THE PROJECT. THE CONTRACTOR MUST NOTIFY ENGINEER, IN WRITING, AT LEAST THIRTY (30) DAYS PRIOR TO ANY TERMINATION, SUSPENSION OR CHANGE OF ITS INSURANCE RETENTION.

THE CONTRACTOR MUST STRICTLY COMPLY WITH THE LATEST AND CURRENT OSHA STANDARDS AND REGULATIONS, AND/OR ANY OTHER AGENCY WITH JURISDICTION OVER EXCAVATION AND TRENCHING PROCEDURES. ENGINEER OF RECORD AND BOHLER HAS NO RESPONSIBILITY FOR OR AS RELATED TO OSHA STANDARDS AND TRENCHING PROCEDURES.

THE CONTRACTOR AND THE OWNER MUST INSTALL ALL ELEMENTS AND COMPONENTS IN STRICT COMPLIANCE WITH AND IN ACCORDANCE WITH MANUFACTURERS STANDARDS AND RECOMMENDED INSTALLATION CRITERIA AND SPECIFICATIONS. IF THE CONTRACTOR AND/OR OWNER FAIL TO DO SO, THEY AGREE TO JOINTLY, INDEPENDENTLY, SEPARATELY, COLLECTIVELY, AND SEVERALLY INDEMNIFY, DEFEND, PROTECT AND HOLD ENGINEER OF RECORD AND BOHLER PARTIES FROM AND AGAINST ALL DAMAGES, COSTS, INJURIES, CLAIMS, ACTIONS, PENALTIES, EXPENSES, PUNITIVE DAMAGES, TORT DAMAGES, STATUTORY CLAIMS, STATUTORY CAUSES OF ACTION, LOSSES, CAUSES OF ACTION, LIABILITIES OR COSTS, ARISING OUT OF OR IN ANY WAY CONNECTED WITH OR RELATED TO THESE PLANS AND THE PROJECT, INCLUDING ALL CLAIMS BY EMPLOYEES OF THE CONTRACTORS, ALL CLAIMS BY THIRD PARTIES AND ALL CLAIMS RELATED TO THE PROJECT. THE CONTRACTOR MUST NOTIFY ENGINEER, IN WRITING, AT LEAST THIRTY (30) DAYS PRIOR TO ANY TERMINATION, SUSPENSION OR CHANGE OF ITS INSURANCE RETENTION.

THE CONTRACTOR IS RESPONSIBLE TO MAINTAIN AN ON SITE STORMWATER POLLUTION PREVENTION PLAN (SWPPP) IN COMPLIANCE WITH THE ENVIRONMENTAL PROTECTION AGENCY (EPA) REQUIREMENTS OR LOCAL GOVERNING AGENCY FOR SITES WHERE ONE (1) ACRE OR MORE IS DISTURBED BY CONSTRUCTION ACTIVITIES (UNLESS THE LOCAL JURISDICTION REQUIRES A DIFFERENT THRESHOLD). THE CONTRACTOR MUST ENSURE THAT ALL ACTIVITIES, INCLUDING THOSE OF ALL SUBCONTRACTORS AND SUPPLIERS, COMPLY WITH THE SWPPP PLAN AND ALL APPLICABLE FEDERAL, STATE AND LOCAL REGULATIONS AND STANDARDS. THE CONTRACTOR IS SOLELY AND COMPLETELY RESPONSIBLE FOR FAILING TO DO SO.

AS CONTAINED IN THESE DRAWINGS AND ASSOCIATED DOCUMENTS PREPARED BY THE ENGINEER OF RECORD AND BOHLER, THE USE OF THE WORDS "CERTIFY" OR "CERTIFICATION" CONSTITUTES AN EMPLOYERS OBLIGATION TO OBTAIN THE INFORMATION WHICH IS THE BASIS OF THE ENGINEER OF RECORDS AND BOHLER KNOWLEDGE OR BELIEF AND IN ACCORDANCE WITH COMMON AND ACCEPTED PROCEDURE CONSISTENT WITH THE APPLICABLE STANDARDS OF PRACTICE, AND DOES NOT CONSTITUTE A WARRANTY OR GUARANTEE OF ANY NATURE OR TYPE, EITHER EXPRESSED OR IMPLIED, UNDER ANY CIRCUMSTANCES.

CONTRACTOR IS CAUTIONED OF EXISTING UTILITY SERVICES TO REMAIN IN PROXIMITY TO PROPOSED BOLLARDS AND SIGNS. CONTRACTOR SHALL PROVIDE FIELD MODIFICATION LOCATIONS OF BOLLARDS AND BOLLARDS WITH SIGNAGE AS NEEDED TO AVOID CONFLICTS WITH EXISTING UTILITY SERVICES TO REMAIN.

CONTRACTOR MUST REPAIR OR REPLACE, AT THE CONTRACTORS SOLE COST AND EXPENSE, ALL SIDEWALKS, CURBS, PAVEMENT MARKINGS, AND PAVEMENT DAMAGED BY CONSTRUCTION ACTIVITIES WHETHER SPECIFIED ON THIS PLAN OR NOT.

WORK WITHIN THE RIGHT-OF-WAY MUST BE PERFORMED IN ACCORDANCE WITH ALL APPLICABLE REQUIREMENTS AND STANDARDS OF THE DEPARTMENT OF PUBLIC WORKS, ENGINEERING DEPARTMENT, HIGHWAY DIVISION, AND/OR STATE DOT HIGHWAY DEPARTMENT.

WHERE RETAINING WALLS ARE IDENTIFIED ON THE PLANS, TOP AND BOTTOM OF WALL WIDTHS DO NOT REPRESENT THE ACTUAL WIDTH OF THE PROPOSED WALL. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING THE ACTUAL WIDTHS AND BE SET BASED UPON FINAL STRUCTURAL DESIGN SHOP DRAWINGS PREPARED BY THE APPROPRIATE PROFESSIONAL LICENSED IN THE STATE WHERE THE CONSTRUCTION OCCURS. THE CONTRACTOR MUST ENSURE THAT AN APPROPRIATELY LICENSED PROFESSIONAL DESIGNER ALL VIEWS ARE SHOWN HEREON AND PRIOR TO CONSTRUCTION, REFER TO GRADING NOTES REGARDING RETAINING WALL DESIGN.

CONTRACTOR IS CAUTIONED OF EXISTING UTILITY SERVICES TO REMAIN IN PROXIMITY TO PROPOSED BOLLARDS AND SIGNS. CONTRACTOR SHALL PROVIDE FIELD MODIFICATION LOCATIONS OF BOLLARDS AND BOLLARDS WITH SIGNAGE AS NEEDED TO AVOID CONFLICTS WITH EXISTING UTILITY SERVICES TO REMAIN.

CONTRACTOR MUST REPAIR OR REPLACE, AT THE CONTRACTORS SOLE COST AND EXPENSE, ALL SIDEWALKS, CURBS, PAVEMENT MARKINGS, AND PAVEMENT DAMAGED BY CONSTRUCTION ACTIVITIES WHETHER SPECIFIED ON THIS PLAN OR NOT.

WORK WITHIN THE RIGHT-OF-WAY MUST BE PERFORMED IN ACCORDANCE WITH ALL APPLICABLE REQUIREMENTS AND STANDARDS OF THE DEPARTMENT OF PUBLIC WORKS, ENGINEERING DEPARTMENT, HIGHWAY DIVISION, AND/OR STATE DOT HIGHWAY DEPARTMENT.

WHERE RETAINING WALLS ARE IDENTIFIED ON THE PLANS, TOP AND BOTTOM OF WALL WIDTHS DO NOT REPRESENT THE ACTUAL WIDTH OF THE PROPOSED WALL. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING THE ACTUAL WIDTHS AND BE SET BASED UPON FINAL STRUCTURAL DESIGN SHOP DRAWINGS PREPARED BY THE APPROPRIATE PROFESSIONAL LICENSED IN THE STATE WHERE THE CONSTRUCTION OCCURS. THE CONTRACTOR MUST ENSURE THAT AN APPROPRIATELY LICENSED PROFESSIONAL DESIGNER ALL VIEWS ARE SHOWN HEREON AND PRIOR TO CONSTRUCTION, REFER TO GRADING NOTES REGARDING RETAINING WALL DESIGN.

CONTRACTOR IS CAUTIONED OF EXISTING UTILITY SERVICES TO REMAIN IN PROXIMITY TO PROPOSED BOLLARDS AND SIGNS. CONTRACTOR SHALL PROVIDE FIELD MODIFICATION LOCATIONS OF BOLLARDS AND BOLLARDS WITH SIGNAGE AS NEEDED TO AVOID CONFLICTS WITH EXISTING UTILITY SERVICES TO REMAIN.

CONTRACTOR MUST REPAIR OR REPLACE, AT THE CONTRACTORS SOLE COST AND EXPENSE, ALL SIDEWALKS, CURBS, PAVEMENT MARKINGS, AND PAVEMENT DAMAGED BY CONSTRUCTION ACTIVITIES WHETHER SPECIFIED ON THIS PLAN OR NOT.

WORK WITHIN THE RIGHT-OF-WAY MUST BE PERFORMED IN ACCORDANCE WITH ALL APPLICABLE REQUIREMENTS AND STANDARDS OF THE DEPARTMENT OF PUBLIC WORKS, ENGINEERING DEPARTMENT, HIGHWAY DIVISION, AND/OR STATE DOT HIGHWAY DEPARTMENT.

WHERE RETAINING WALLS ARE IDENTIFIED ON THE PLANS, TOP AND BOTTOM OF WALL WIDTHS DO NOT REPRESENT THE ACTUAL WIDTH OF THE PROPOSED WALL. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING THE ACTUAL WIDTHS AND BE SET BASED UPON FINAL STRUCTURAL DESIGN SHOP DRAWINGS PREPARED BY THE APPROPRIATE PROFESSIONAL LICENSED IN THE STATE WHERE THE CONSTRUCTION OCCURS. THE CONTRACTOR MUST ENSURE THAT AN APPROPRIATELY LICENSED PROFESSIONAL DESIGNER ALL VIEWS ARE SHOWN HEREON AND PRIOR TO CONSTRUCTION, REFER TO GRADING NOTES REGARDING RETAINING WALL DESIGN.

CONTRACTOR IS CAUTIONED OF EXISTING UTILITY SERVICES TO REMAIN IN PROXIMITY TO PROPOSED BOLLARDS AND SIGNS. CONTRACTOR SHALL PROVIDE FIELD MODIFICATION LOCATIONS OF BOLLARDS AND BOLLARDS WITH SIGNAGE AS NEEDED TO AVOID CONFLICTS WITH EXISTING UTILITY SERVICES TO REMAIN.

CONTRACTOR MUST REPAIR OR REPLACE, AT THE CONTRACTORS SOLE COST AND EXPENSE, ALL SIDEWALKS, CURBS, PAVEMENT MARKINGS, AND PAVEMENT DAMAGED BY CONSTRUCTION ACTIVITIES WHETHER SPECIFIED ON THIS PLAN OR NOT.

WORK WITHIN THE RIGHT-OF-WAY MUST BE PERFORMED IN ACCORDANCE WITH ALL APPLICABLE REQUIREMENTS AND STANDARDS OF THE DEPARTMENT OF PUBLIC WORKS, ENGINEERING DEPARTMENT, HIGHWAY DIVISION, AND/OR STATE DOT HIGHWAY DEPARTMENT.

WHERE RETAINING WALLS ARE IDENTIFIED ON THE PLANS, TOP AND BOTTOM OF WALL WIDTHS DO NOT REPRESENT THE ACTUAL WIDTH OF THE PROPOSED WALL. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING THE ACTUAL WIDTHS AND BE SET BASED UPON FINAL STRUCTURAL DESIGN SHOP DRAWINGS PREPARED BY THE APPROPRIATE PROFESSIONAL LICENSED IN THE STATE WHERE THE CONSTRUCTION OCCURS. THE CONTRACTOR MUST ENSURE THAT AN APPROPRIATELY LICENSED PROFESSIONAL DESIGNER ALL VIEWS ARE SHOWN HEREON AND PRIOR TO CONSTRUCTION, REFER TO GRADING NOTES REGARDING RETAINING WALL DESIGN.

CONTRACTOR IS CAUTIONED OF EXISTING UTILITY SERVICES TO REMAIN IN PROXIMITY TO PROPOSED BOLLARDS AND SIGNS. CONTRACTOR SHALL PROVIDE FIELD MODIFICATION LOCATIONS OF BOLLARDS AND BOLLARDS WITH SIGNAGE AS NEEDED TO AVOID CONFLICTS WITH EXISTING UTILITY SERVICES TO REMAIN.

CONTRACTOR MUST REPAIR OR REPLACE, AT THE CONTRACTORS SOLE COST AND EXPENSE, ALL SIDEWALKS, CURBS, PAVEMENT MARKINGS, AND PAVEMENT DAMAGED BY CONSTRUCTION ACTIVITIES WHETHER SPECIFIED ON THIS PLAN OR NOT.

WORK WITHIN THE RIGHT-OF-WAY MUST BE PERFORMED IN ACCORDANCE WITH ALL APPLICABLE REQUIREMENTS AND STANDARDS OF THE DEPARTMENT OF PUBLIC WORKS, ENGINEERING DEPARTMENT, HIGHWAY DIVISION, AND/OR STATE DOT HIGHWAY DEPARTMENT.

WHERE RETAINING WALLS ARE IDENTIFIED ON THE PLANS, TOP AND BOTTOM OF WALL WIDTHS DO NOT REPRESENT THE ACTUAL WIDTH OF THE PROPOSED WALL. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING THE ACTUAL WIDTHS AND BE SET BASED UPON FINAL STRUCTURAL DESIGN SHOP DRAWINGS PREPARED BY THE APPROPRIATE PROFESSIONAL LICENSED IN THE STATE WHERE THE CONSTRUCTION OCCURS. THE CONTRACTOR MUST ENSURE THAT AN APPROPRIATELY LICENSED PROFESSIONAL DESIGNER ALL VIEWS ARE SHOWN HEREON AND PRIOR TO CONSTRUCTION, REFER TO GRADING NOTES REGARDING RETAINING WALL DESIGN.

CONTRACTOR IS CAUTIONED OF EXISTING UTILITY SERVICES TO REMAIN IN PROXIMITY TO PROPOSED BOLLARDS AND SIGNS. CONTRACTOR SHALL PROVIDE FIELD MODIFICATION LOCATIONS OF BOLLARDS AND BOLLARDS WITH SIGNAGE AS NEEDED TO AVOID CONFLICTS WITH EXISTING UTILITY SERVICES TO REMAIN.

CONTRACTOR MUST REPAIR OR REPLACE, AT THE CONTRACTORS SOLE COST AND EXPENSE, ALL SIDEWALKS, CURBS, PAVEMENT MARKINGS, AND PAVEMENT DAMAGED BY CONSTRUCTION ACTIVITIES WHETHER SPECIFIED ON THIS PLAN OR NOT.

WORK WITHIN THE RIGHT-OF-WAY MUST BE PERFORMED IN ACCORDANCE WITH ALL APPLICABLE REQUIREMENTS AND STANDARDS OF THE DEPARTMENT OF PUBLIC WORKS, ENGINEERING DEPARTMENT, HIGHWAY DIVISION, AND/OR STATE DOT HIGHWAY DEPARTMENT.

WHERE RETAINING WALLS ARE IDENTIFIED ON THE PLANS, TOP AND BOTTOM OF WALL WIDTHS DO NOT REPRESENT THE ACTUAL WIDTH OF THE PROPOSED WALL. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING THE ACTUAL WIDTHS AND BE SET BASED UPON FINAL STRUCTURAL DESIGN SHOP DRAWINGS PREPARED BY THE APPROPRIATE PROFESSIONAL LICENSED IN THE STATE WHERE THE CONSTRUCTION OCCURS. THE CONTRACTOR MUST ENSURE THAT AN APPROPRIATELY LICENSED PROFESSIONAL DESIGNER ALL VIEWS ARE SHOWN HEREON AND PRIOR TO CONSTRUCTION, REFER TO GRADING NOTES REGARDING RETAINING WALL DESIGN.

CONTRACTOR IS CAUTIONED OF EXISTING UTILITY SERVICES TO REMAIN IN PROXIMITY TO PROPOSED BOLLARDS AND SIGNS. CONTRACTOR SHALL PROVIDE FIELD MODIFICATION LOCATIONS OF BOLLARDS AND BOLLARDS WITH SIGNAGE AS NEEDED TO AVOID CONFLICTS WITH EXISTING UTILITY SERVICES TO REMAIN.

CONTRACTOR MUST REPAIR OR REPLACE, AT THE CONTRACTORS SOLE COST AND EXPENSE, ALL SIDEWALKS, CURBS, PAVEMENT MARKINGS, AND PAVEMENT DAMAGED BY CONSTRUCTION ACTIVITIES WHETHER SPECIFIED ON THIS PLAN OR NOT.

WORK WITHIN THE RIGHT-OF-WAY MUST BE PERFORMED IN ACCORDANCE WITH ALL APPLICABLE REQUIREMENTS AND STANDARDS OF THE DEPARTMENT OF PUBLIC WORKS, ENGINEERING DEPARTMENT, HIGHWAY DIVISION, AND/OR STATE DOT HIGHWAY DEPARTMENT.

WHERE RETAINING WALLS ARE IDENTIFIED ON THE PLANS, TOP AND BOTTOM OF WALL WIDTHS DO NOT REPRESENT THE ACTUAL WIDTH OF THE PROPOSED WALL. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING THE ACTUAL WIDTHS AND BE SET BASED UPON FINAL STRUCTURAL DESIGN SHOP DRAWINGS PREPARED BY THE APPROPRIATE PROFESSIONAL LICENSED IN THE STATE WHERE THE CONSTRUCTION OCCURS. THE CONTRACTOR MUST ENSURE THAT AN APPROPRIATELY LICENSED PROFESSIONAL DESIGNER ALL VIEWS ARE SHOWN HEREON AND PRIOR TO CONSTRUCTION, REFER TO GRADING NOTES REGARDING RETAINING WALL DESIGN.

CONTRACTOR IS CAUTIONED OF EXISTING UTILITY SERVICES TO REMAIN IN PROXIMITY TO PROPOSED BOLLARDS AND SIGNS. CONTRACTOR SHALL PROVIDE FIELD MODIFICATION LOCATIONS OF BOLLARDS AND BOLLARDS WITH SIGNAGE AS NEEDED TO AVOID CONFLICTS WITH EXISTING UTILITY SERVICES TO REMAIN.

CONTRACTOR MUST REPAIR OR REPLACE, AT THE CONTRACTORS SOLE COST AND EXPENSE, ALL SIDEWALKS, CURBS, PAVEMENT MARKINGS, AND PAVEMENT DAMAGED BY CONSTRUCTION ACTIVITIES WHETHER SPECIFIED ON THIS PLAN OR NOT.

WORK WITHIN THE RIGHT-OF-WAY MUST BE PERFORMED IN ACCORDANCE WITH ALL APPLICABLE REQUIREMENTS AND STANDARDS OF THE DEPARTMENT OF PUBLIC WORKS, ENGINEERING DEPARTMENT, HIGHWAY DIVISION, AND/OR STATE DOT HIGHWAY DEPARTMENT.

WHERE RETAINING WALLS ARE IDENTIFIED ON THE PLANS, TOP AND BOTTOM OF WALL WIDTHS DO NOT REPRESENT THE ACTUAL WIDTH OF THE PROPOSED WALL. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING THE ACTUAL WIDTHS AND BE SET BASED UPON FINAL STRUCTURAL DESIGN SHOP DRAWINGS PREPARED BY THE APPROPRIATE PROFESSIONAL LICENSED IN THE STATE WHERE THE CONSTRUCTION OCCURS. THE CONTRACTOR MUST ENSURE THAT AN APPROPRIATELY LICENSED PROFESSIONAL DESIGNER ALL VIEWS ARE SHOWN HEREON AND PRIOR TO CONSTRUCTION, REFER TO GRADING NOTES REGARDING RETAINING WALL DESIGN.

CONTRACTOR IS CAUTIONED OF EXISTING UTILITY SERVICES TO REMAIN IN PROXIMITY TO PROPOSED BOLLARDS AND SIGNS. CONTRACTOR SHALL PROVIDE FIELD MODIFICATION LOCATIONS OF BOLLARDS AND BOLLARDS WITH SIGNAGE AS NEEDED TO AVOID CONFLICTS WITH EXISTING UTILITY SERVICES TO REMAIN.

CONTRACTOR MUST REPAIR OR REPLACE, AT THE CONTRACTORS SOLE COST AND EXPENSE, ALL SIDEWALKS, CURBS, PAVEMENT MARKINGS, AND PAVEMENT DAMAGED BY CONSTRUCTION ACTIVITIES WHETHER SPECIFIED ON THIS PLAN OR NOT.

WORK WITHIN THE RIGHT-OF-WAY MUST BE PERFORMED IN ACCORDANCE WITH ALL APPLICABLE REQUIREMENTS AND STANDARDS OF THE DEPARTMENT OF PUBLIC WORKS, ENGINEERING DEPARTMENT, HIGHWAY DIVISION, AND/OR STATE DOT HIGHWAY DEPARTMENT.

WHERE RETAINING WALLS ARE IDENTIFIED ON THE PLANS, TOP AND BOTTOM OF WALL WIDTHS DO NOT REPRESENT THE ACTUAL WIDTH OF THE PROPOSED WALL. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING THE ACTUAL WIDTHS AND BE SET BASED UPON FINAL STRUCTURAL DESIGN SHOP DRAWINGS PREPARED BY THE APPROPRIATE PROFESSIONAL LICENSED IN THE STATE WHERE THE CONSTRUCTION OCCURS. THE CONTRACTOR MUST ENSURE THAT AN APPROPRIATELY LICENSED PROFESSIONAL DESIGNER ALL VIEWS ARE SHOWN HEREON AND PRIOR TO CONSTRUCTION, REFER TO GRADING NOTES REGARDING RETAINING WALL DESIGN.

CONTRACTOR IS CAUTIONED OF EXISTING UTILITY SERVICES TO REMAIN IN PROXIMITY TO PROPOSED BOLLARDS AND SIGNS. CONTRACTOR SHALL PROVIDE FIELD MODIFICATION LOCATIONS OF BOLLARDS AND BOLLARDS WITH SIGNAGE AS NEEDED TO AVOID CONFLICTS WITH EXISTING UTILITY SERVICES TO REMAIN.

CONTRACTOR MUST REPAIR OR REPLACE, AT THE CONTRACTORS SOLE COST AND EXPENSE, ALL SIDEWALKS, CURBS, PAVEMENT MARKINGS, AND PAVEMENT DAMAGED BY CONSTRUCTION ACTIVITIES WHETHER SPECIFIED ON THIS PLAN OR NOT.

WORK WITHIN THE RIGHT-OF-WAY MUST BE PERFORMED IN ACCORDANCE WITH ALL APPLICABLE REQUIREMENTS AND STANDARDS OF THE DEPARTMENT OF PUBLIC WORKS, ENGINEERING DEPARTMENT, HIGHWAY DIVISION, AND/OR STATE DOT HIGHWAY DEPARTMENT.

WHERE RETAINING WALLS ARE IDENTIFIED ON THE PLANS, TOP AND BOTTOM OF WALL WIDTHS DO NOT REPRESENT THE ACTUAL WIDTH OF THE PROPOSED WALL. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING THE ACTUAL WIDTHS AND BE SET BASED UPON FINAL STRUCTURAL DESIGN SHOP DRAWINGS PREPARED BY THE APPROPRIATE PROFESSIONAL LICENSED IN THE STATE WHERE THE CONSTRUCTION OCCURS. THE CONTRACTOR MUST ENSURE THAT AN APPROPRIATELY LICENSED PROFESSIONAL DESIGNER ALL VIEWS ARE SHOWN HEREON AND PRIOR TO CONSTRUCTION, REFER TO GRADING NOTES REGARDING RETAINING WALL DESIGN.

CONTRACTOR IS CAUTIONED OF EXISTING UTILITY SERVICES TO REMAIN IN PROXIMITY TO PROPOSED BOLLARDS AND SIGNS. CONTRACTOR SHALL PROVIDE FIELD MODIFICATION LOCATIONS OF BOLLARDS AND BOLLARDS WITH SIGNAGE AS NEEDED TO AVOID CONFLICTS WITH EXISTING UTILITY SERVICES TO REMAIN.

CONTRACTOR MUST REPAIR OR REPLACE, AT THE CONTRACTORS SOLE COST AND EXPENSE, ALL SIDEWALKS, CURBS, PAVEMENT MARKINGS, AND PAVEMENT DAMAGED BY CONSTRUCTION ACTIVITIES WHETHER SPECIFIED ON THIS PLAN OR NOT.

WORK WITHIN THE RIGHT-OF-WAY MUST BE PERFORMED IN ACCORDANCE WITH ALL APPLICABLE REQUIREMENTS AND STANDARDS OF THE DEPARTMENT OF PUBLIC WORKS, ENGINEERING DEPARTMENT, HIGHWAY DIVISION, AND/OR STATE DOT HIGHWAY DEPARTMENT.

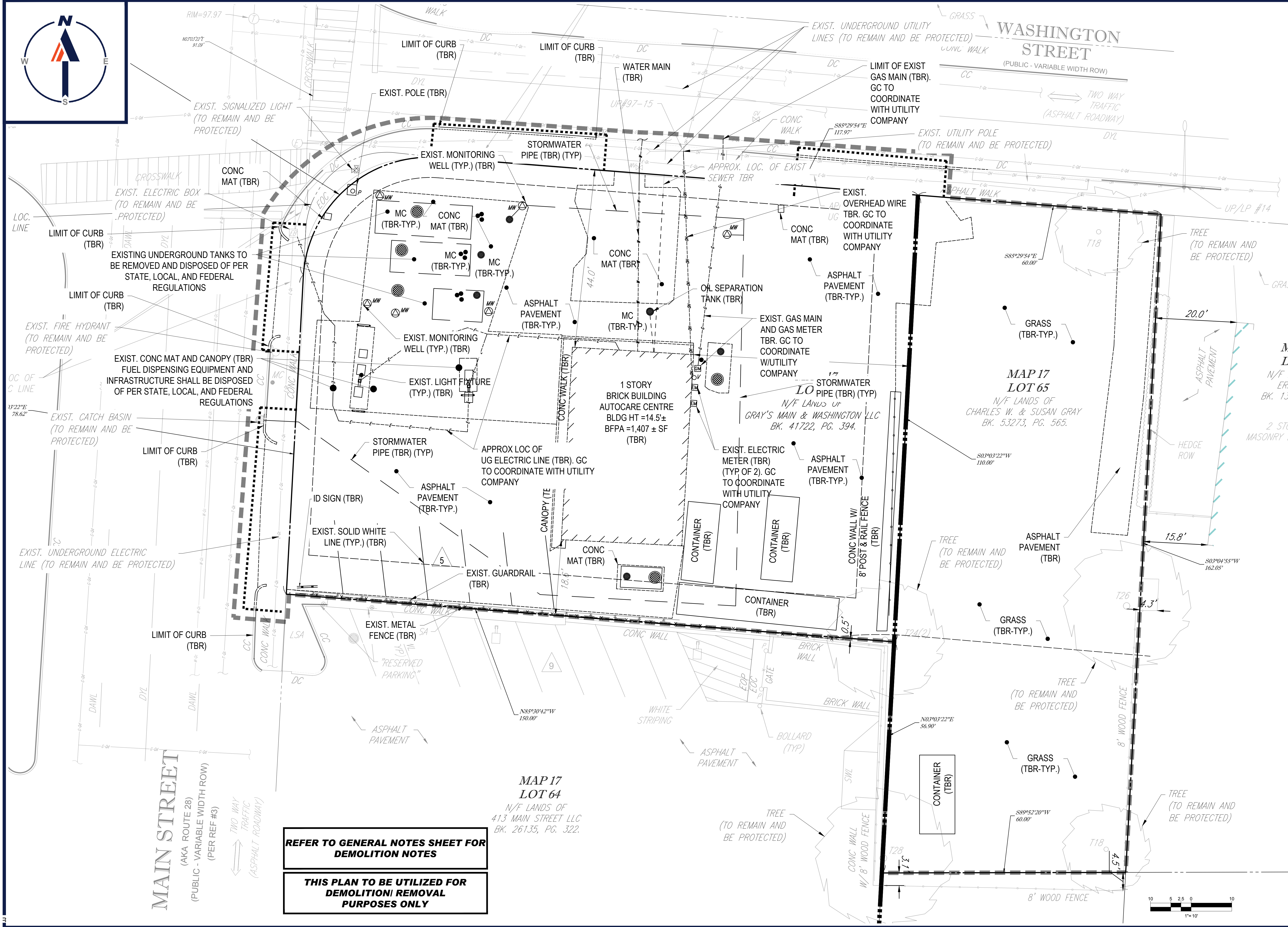
WHERE RETAINING WALLS ARE IDENTIFIED ON THE PLANS, TOP AND BOTTOM OF WALL WIDTHS DO NOT REPRESENT THE ACTUAL WIDTH OF THE PROPOSED WALL. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING THE ACTUAL WIDTHS AND BE SET BASED UPON FINAL STRUCTURAL DESIGN SHOP DRAWINGS PREPARED BY THE APPROPRIATE PROFESSIONAL LICENSED IN THE STATE WHERE THE CONSTRUCTION OCCURS. THE CONTRACTOR MUST ENSURE THAT AN APPROPRIATELY LICENSED PROFESSIONAL DESIGNER ALL VIEWS ARE SHOWN HEREON AND PRIOR TO CONSTRUCTION, REFER TO GRADING NOTES REGARDING RETAINING WALL DESIGN.

CONTRACTOR IS CAUTIONED OF EXISTING UTILITY SERVICES TO REMAIN IN PROXIMITY TO PROPOSED BOLLARDS AND SIGNS. CONTRACTOR SHALL PROVIDE FIELD MODIFICATION LOCATIONS OF BOLLARDS AND BOLLARDS WITH SIGNAGE AS NEEDED TO AVOID CONFLICTS WITH EXISTING UTILITY SERVICES TO REMAIN.

CONTRACTOR MUST REPAIR OR REPLACE, AT THE CONTRACTORS SOLE COST AND EXPENSE, ALL SIDEWALKS, CURBS, PAVEMENT MARKINGS, AND PAVEMENT DAMAGED BY CONSTRUCTION ACTIVITIES WHETHER SPECIFIED ON THIS PLAN OR NOT.

WORK WITHIN THE RIGHT-OF-WAY MUST BE PERFORMED IN ACCORDANCE WITH ALL APPLICABLE REQUIREMENTS AND STANDARDS OF THE DEPARTMENT OF PUBLIC WORKS, ENGINEERING DEPARTMENT, HIGHWAY DIVISION, AND/OR STATE DOT HIGHWAY DEPARTMENT.





**REFER TO GENERAL NOTES SHEET FOR DEMOLITION NOTES**

**THIS PLAN TO BE UTILIZED FOR DEMOLITION/ REMOVAL PURPOSES ONLY**

**BOHLER**  
 SITE CIVIL AND CONSULTING ENGINEERING  
 PROGRAM MANAGEMENT  
 LANDSCAPE ARCHITECTURE  
 SUSTAINABLE DESIGN  
 PERMITTING SERVICES  
 TRANSPORTATION SERVICES

**REVISIONS**

| REV | DATE       | COMMENT           | CHECKED BY | DRAWN BY |
|-----|------------|-------------------|------------|----------|
| 1   | 04/03/2023 | PER TOWN COMMENTS | JJ         | JF       |

**811**  
 Know what's below.  
 Call before you dig.  
 ALWAYS CALL 811  
 It's fast. It's free. It's the law.

**PERMIT SET**

THIS DRAWING IS INTENDED FOR MUNICIPAL AND/OR AGENCY REVIEW AND APPROVAL. IT IS NOT INTENDED AS A CONSTRUCTION DOCUMENT UNLESS INDICATED OTHERWISE.

PROJECT No.: MAA220275.00  
 DRAWN BY: CFDR/JRJ  
 CHECKED BY: JF/RMM  
 DATE: 04/03/2023  
 CAD ID: MAA220275.00-SPPD-08

**PROPOSED SITE PLAN DOCUMENTS**

FOR

**CHASE**

PROPOSED BANK DEVELOPMENT  
 MAP: 17 LOT: 63  
 431 MAIN STREET,  
 TOWN OF READING,  
 MIDDLESEX COUNTY,  
 MASSACHUSETTS

**BOHLER**  
 352 TURNPIKE ROAD  
 SOUTHBOROUGH, MA 01772  
 Phone: (508) 480-9900  
 www.BohlerEngineering.com

SHEET TITLE:  
**DEMOLITION PLAN**

SHEET NUMBER:  
**C-201**

REVISION 1 - 04/03/2023

P:\2023\MAA220275.00\CADD\DRAWINGS\PLAN SET\CIVIL\SITE PLANS\MAA220275.00-SPPD-08.dwg - LAYOUT: C-201.DWG





| ZONING ANALYSIS TABLE       |   |   |  |
|-----------------------------|---|---|--|
| ZONING DISTRICT             | BUSINESS B DISTRICT (BUS B)   |   |  |
| OVERLAY DISTRICT            | YES   |   |  |
| REQUIRED PERMIT             | PERMIT FROM DEPT.   |   |  |
| ZONE CRITERIA               | REQUIRED  | EXISTING  | PROPOSED   |
| MIN. LOT AREA               | N/A   | 16,275 SF   | NO CHANGE  |
| MIN. LOT WIDTH              | N/A   | 100 FT  | NO CHANGE  |
| MAX. BLDG COVERAGE          | 85%   | 8.6%  | 20.2%  |
| MIN. FRONT SETBACK          | 5 FT  | 44 FT   | 5 FT   |
| MIN. SIDE SETBACK           | 10 FT   | 53 FT   | 5 FT   |
| MIN. REAR SETBACK           | 20 FT   | N/A   | N/A  |
| MAX. BUILDING HEIGHT        | 45 FT   | <45 FT  | <45 FT   |
| PARKING SPACES              | 11  | 5   | 15   |
| ACCESS. PARKING SPACES      | 1   | 0   | 1  |
| PARKING STALL CRITERIA      | USE CATEGORY: OFFICE AND PROFESSIONAL BUILDING  |   |  |
| STANDARD: 9 FT x 18 FT      | REQUIRED PARKING: 1 SPACE PER 300 SF  |   |  |
| COMPACT: 8 FT x 16 FT       | CALCULATION: 3,293 / 300 = 10.9 SPACES  |   |  |
| ACCESSIBLE PARKING CRITERIA | 1-25 SPACES = 1 MIN. ACCESSIBLE SPACE<br>26-50 SPACES = 2 MIN. ACCESSIBLE SPACES<br>51-75 SPACES = 3 MIN. ACCESSIBLE SPACES<br>76-100 SPACES = 4 MIN. ACCESSIBLE SPACES<br>101-150 SPACES = 5 MIN. ACCESSIBLE SPACES<br>151-200 SPACES = 6 MIN. ACCESSIBLE SPACES<br>201-300 SPACES = 7 MIN. ACCESSIBLE SPACES<br>301-400 SPACES = 8 MIN. ACCESSIBLE SPACES | 401-500 SPACES = 9 MIN. ACCESSIBLE SPACES<br>501-1,000 SPACES = MIN. 2% OF TOTAL<br>1001+ SPACES = MIN. 2% + 1 FOR EACH 100 SPACES OVER 1,000 | 1 ACCESSIBLE VAN SPACE PER 6 STANDARD ACCESSIBLE SPACES (MIN.) |

**BOHLER**  
 SITE CIVIL AND CONSULTING ENGINEERING  
 PROGRAM MANAGEMENT  
 LANDSCAPE ARCHITECTURE  
 SUSTAINABLE DESIGN  
 PERMITTING SERVICES  
 TRANSPORTATION SERVICES

| REVISIONS |            |                   |          |            |
|-----------|------------|-------------------|----------|------------|
| REV       | DATE       | COMMENT           | DRAWN BY | CHECKED BY |
| 1         | 04/03/2023 | PER TOWN COMMENTS | JJ       | JF         |

**811**  
 Know what's below.  
 Call before you dig.  
 ALWAYS CALL 811  
 It's fast. It's free. It's the law.

**PERMIT SET**

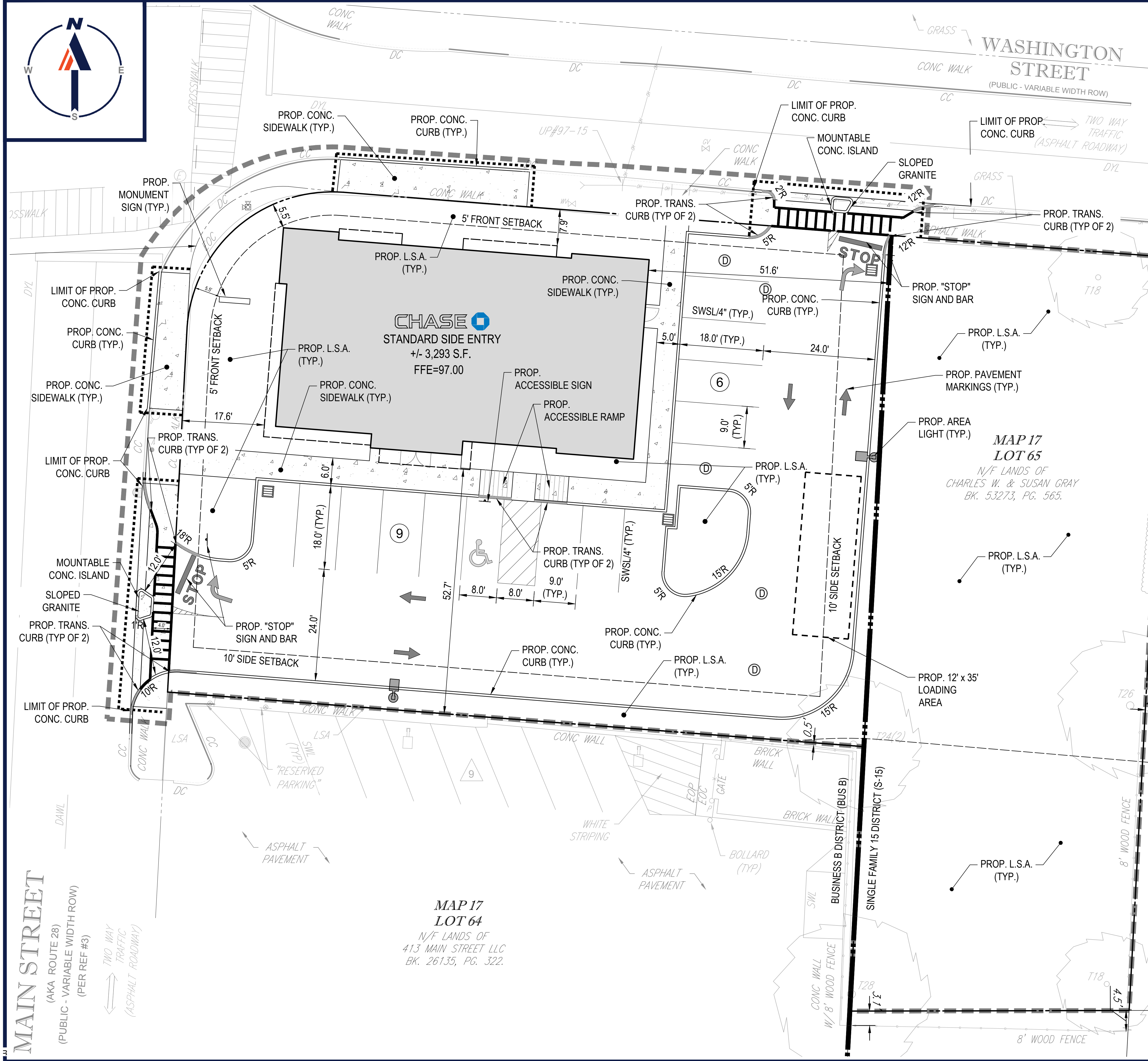
PROJECT No.: MAA220275.00  
 DRAWN BY: CFD/JRJ  
 CHECKED BY: JF/RMM  
 DATE: 04/03/2023  
 CAD ID: MAA220275.00-SPPD-08

**PROPOSED SITE PLAN DOCUMENTS**

FOR  
**CHASE**  
 PROPOSED BANK DEVELOPMENT  
 MAP: 17 LOT: 63  
 431 MAIN STREET,  
 TOWN OF READING,  
 MIDDLESEX COUNTY,  
 MASSACHUSETTS

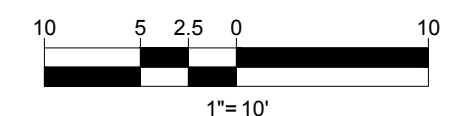
**BOHLER**  
 352 TURNPIKE ROAD  
 SOUTHBOROUGH, MA 01772  
 Phone: (508) 480-9900  
 www.BohlerEngineering.com

SHEET TITLE:  
**SITE LAYOUT PLAN**  
 SHEET NUMBER:  
**C-301**  
 REVISION 1 - 04/03/2023



**MAINTENANCE OF A CLEAR SIGHT LINE IS THE RESPONSIBILITY OF THE PROPERTY OWNER**

**THIS PLAN TO BE UTILIZED FOR SITE LAYOUT PURPOSES ONLY. REFER TO GENERAL NOTES SHEET FOR ADDITIONAL NOTES**



P:\2022\MAA220275.00\CADD\DRAWINGS\PLAN SET\CIVIL SITE PLANS\MAA220275.00-SPPD-08.dwg - LAYOUT: C-301 SITE





M=97.97

WASHINGTON STREET  
(PUBLIC - VARIABLE WIDTH ROW)

TWO WAY TRAFFIC  
(ASPHALT ROADWAY)

MAIN STREET  
(AKA ROUTE 28)  
(PUBLIC - VARIABLE WIDTH ROW)  
(PER REF #3)

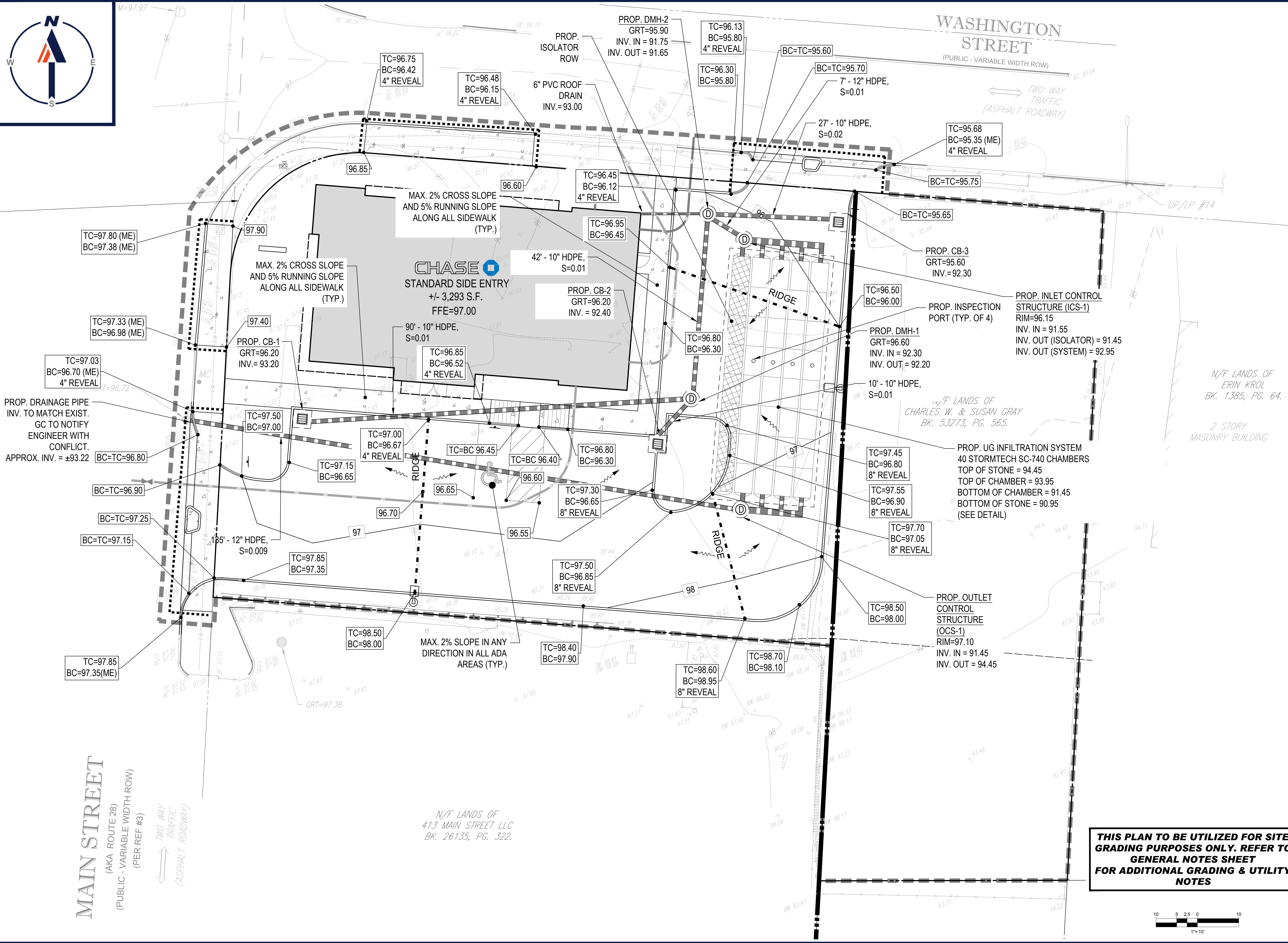
TWO WAY TRAFFIC  
(ASPHALT ROADWAY)

N/F LANDS OF  
413 MAIN STREET LLC  
BK. 26135, PG. 322.

N/F LANDS OF  
CHARLES W. & SUSAN GRAY  
BK. 53273, PG. 565.

N/F LANDS OF  
ERIN KROL  
BK. 1385, PG. 64.

2 STORY  
MASONRY BUILDING



**BOHLER**  
SITE CIVIL AND CONSULTING ENGINEERING  
PROGRAM MANAGEMENT  
LANDSCAPE ARCHITECTURE  
SUSTAINABLE DESIGN  
PERMITTING SERVICES  
TRANSPORTATION SERVICES

**REVISIONS**

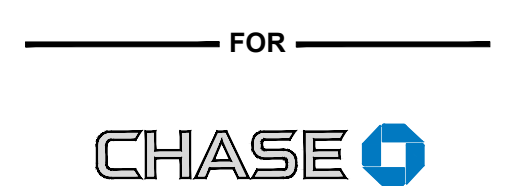
| REV | DATE       | COMMENT           | CHECKED BY | DRAWN BY |
|-----|------------|-------------------|------------|----------|
| 1   | 04/03/2023 | PER TOWN COMMENTS | JJ         | JF       |

**811**  
Know what's below.  
Call before you dig.  
ALWAYS CALL 811  
It's fast. It's free. It's the law.

**PERMIT SET**  
THIS DRAWING IS INTENDED FOR MUNICIPAL AND/OR AGENCY REVIEW AND APPROVAL. IT IS NOT INTENDED AS A CONSTRUCTION DOCUMENT UNLESS INDICATED OTHERWISE.

PROJECT No.: MAA220275.00  
DRAWN BY: CFD/JRJ  
CHECKED BY: JF/RMM  
DATE: 04/03/2023  
CAD ID: MAA220275.00-SPPD-08

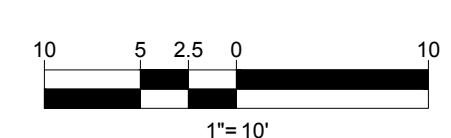
**PROPOSED SITE PLAN DOCUMENTS**



PROPOSED BANK DEVELOPMENT  
MAP: 17 LOT: 63  
431 MAIN STREET,  
TOWN OF READING,  
MIDDLESEX COUNTY,  
MASSACHUSETTS

**BOHLER**  
352 TURNPIKE ROAD  
SOUTHBOROUGH, MA 01772  
Phone: (508) 480-9900  
www.BohlerEngineering.com

**THIS PLAN TO BE UTILIZED FOR SITE GRADING PURPOSES ONLY. REFER TO GENERAL NOTES SHEET FOR ADDITIONAL GRADING & UTILITY NOTES**



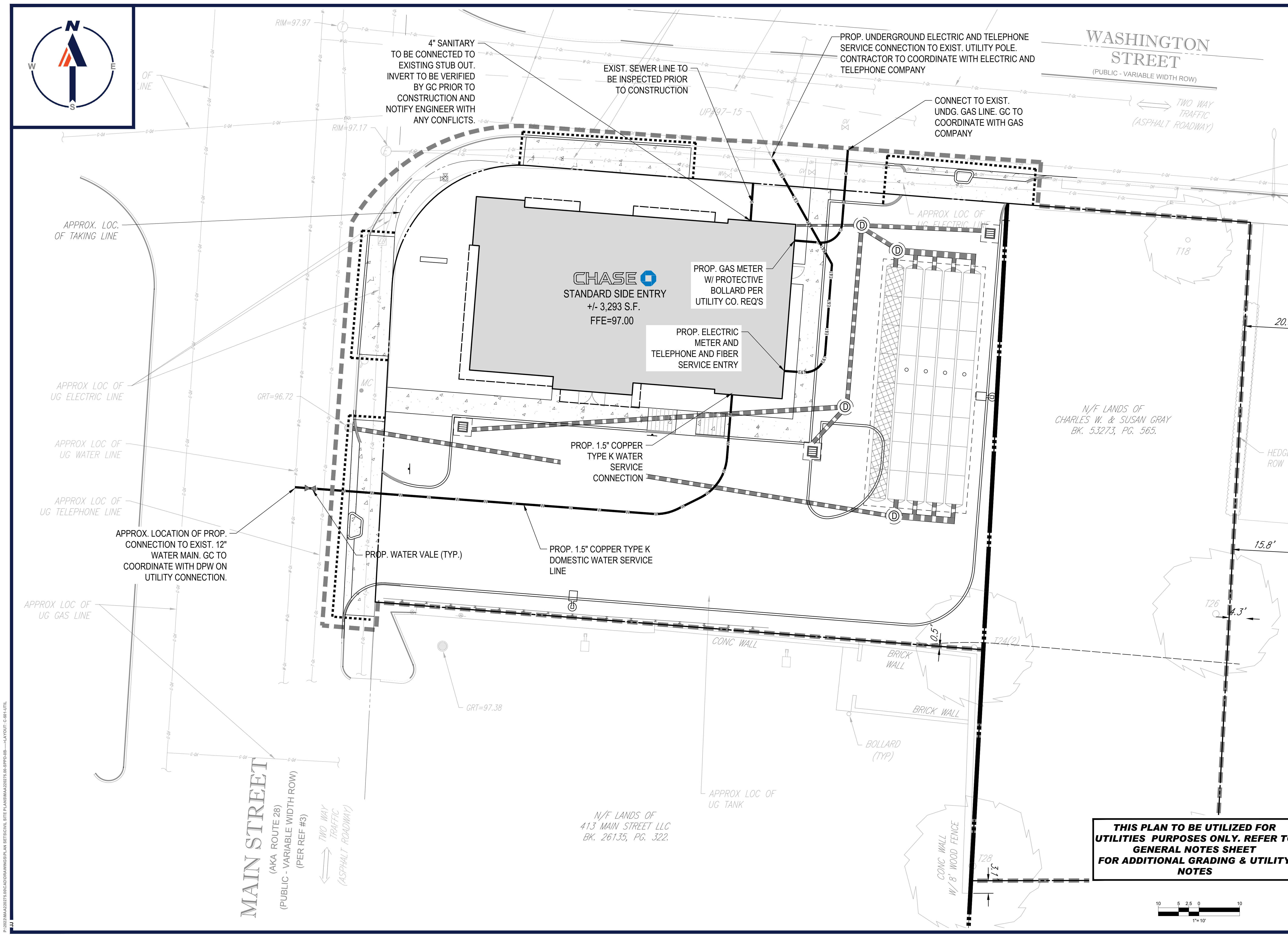
SHEET TITLE:  
**GRADING & DRAINAGE PLAN**

SHEET NUMBER:  
**C-401**

REVISION 1 - 04/03/2023

P:\2022\MAA220275.00\CADD\DRAWINGS\PLAN SET\CIVIL SITE PLANS\MAA220275.00-SPPD-08.dwg - LAYOUT: C-401 GRAD\_DRAIN





**BOHLER**  
SITE CIVIL AND CONSULTING ENGINEERING  
PROGRAM MANAGEMENT  
LANDSCAPE ARCHITECTURE  
SUSTAINABLE DESIGN  
PERMITTING SERVICES  
TRANSPORTATION SERVICES

**REVISIONS**

| REV | DATE       | COMMENT           | CHECKED BY | DRAWN BY |
|-----|------------|-------------------|------------|----------|
| 1   | 04/03/2023 | PER TOWN COMMENTS | JJ         | JF       |

**811**  
Know what's below.  
Call before you dig.  
ALWAYS CALL 811  
It's fast. It's free. It's the law.

**PERMIT SET**

THIS DRAWING IS INTENDED FOR MUNICIPAL AND/OR AGENCY REVIEW AND APPROVAL. IT IS NOT INTENDED AS A CONSTRUCTION DOCUMENT UNLESS INDICATED OTHERWISE.

PROJECT No.: MAA220275.00  
DRAWN BY: CFD/JRJ  
CHECKED BY: JF/RMM  
DATE: 04/03/2023  
CAD ID: MAA220275.00-SPPD-08

**PROPOSED SITE PLAN DOCUMENTS**

FOR

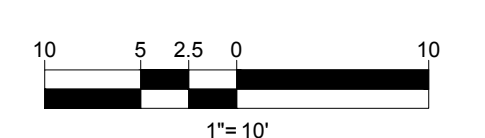
**CHASE**

PROPOSED BANK DEVELOPMENT  
MAP: 17 LOT: 63  
431 MAIN STREET,  
TOWN OF READING,  
MIDDLESEX COUNTY,  
MASACHUSETTS

**BOHLER**

352 TURNPIKE ROAD  
SOUTHBOROUGH, MA 01772  
Phone: (508) 480-9900  
[www.BohlerEngineering.com](http://www.BohlerEngineering.com)

**THIS PLAN TO BE UTILIZED FOR UTILITIES PURPOSES ONLY. REFER TO GENERAL NOTES SHEET FOR ADDITIONAL GRADING & UTILITY NOTES**



SHEET TITLE:  
**UTILITY PLAN**

SHEET NUMBER:  
**C-501**

REVISION 1 - 04/03/2023

P:\2023\MAA220275.00\CADD\DRAWINGS\PLAN SET\CIVIL SITE PLANS\MAA220275.00-SPPD-08.dwg - LAYOUT: C-501-UTIL





WASHINGTON STREET  
(PUBLIC - VARIABLE WIDTH ROW)

TWO WAY TRAFFIC  
(ASPHALT ROADWAY)

PROP. STABILIZED CONSTRUCTION  
ENTRANCE/EXIT. ALL VEHICLES TO UTILIZE  
PRIOR TO LEAVING SITE

PROP. SILTATION  
BARRIER (TYP.)

**CHASE**  
STANDARD SIDE ENTRY  
+/- 3,293 S.F.  
FFE=97.00

PROP. INLET  
PROTECTION  
(TYP.)

PROP. INLET  
PROTECTION  
(TYP.)

PROP. INLET  
PROTECTION  
(TYP.)

PROP. TEMPORARY SOIL  
STOCKPILE AREA SURROUNDED  
BY STRAW BALES & SILT FENCE

N/F LANDS OF  
CHARLES W. & SUSAN GRAY  
BK. 53273, PG. 565.

HEDGE  
ROW

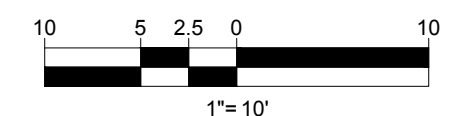
N/F LANDS OF  
413 MAIN STREET LLC  
BK. 26135, PG. 322.

**MAIN STREET**  
(AKA ROUTE 28)  
(PUBLIC - VARIABLE WIDTH ROW)  
(PER REF #3)

TWO WAY  
TRAFFIC  
(ASPHALT ROADWAY)

**THIS PLAN TO BE UTILIZED FOR SITE  
SOIL AND EROSION CONTROL  
PURPOSES ONLY**

**REFER TO SOIL EROSION CONTROL  
NOTES & DETAIL SHEET FOR EROSION  
NOTES AND DETAILS**



**BOHLER**  
SITE CIVIL AND CONSULTING ENGINEERING  
PROGRAM MANAGEMENT  
LANDSCAPE ARCHITECTURE  
SUSTAINABLE DESIGN  
PERMITTING SERVICES  
TRANSPORTATION SERVICES

**REVISIONS**

| REV | DATE       | COMMENT           | CHECKED BY | DRAWN BY |
|-----|------------|-------------------|------------|----------|
| 1   | 04/03/2023 | PER TOWN COMMENTS | JJ         | JF       |

**811**  
Know what's below.  
Call before you dig.  
ALWAYS CALL 811  
It's fast. It's free. It's the law.

**PERMIT SET**

THIS DRAWING IS INTENDED FOR MUNICIPAL AND/OR AGENCY REVIEW AND APPROVAL. IT IS NOT INTENDED AS A CONSTRUCTION DOCUMENT UNLESS INDICATED OTHERWISE.

PROJECT NO.: MAA220275.00  
DRAWN BY: CFD/JRJ  
CHECKED BY: JF/RMM  
DATE: 04/03/2023  
CAD ID: MAA220275.00-SPPD-08

**PROPOSED SITE  
PLAN DOCUMENTS**

FOR

**CHASE**

PROPOSED  
BANK DEVELOPMENT

MAP: 17 LOT: 63  
431 MAIN STREET,  
TOWN OF READING,  
MIDDLESEX COUNTY,  
MASACHUSETTS

**BOHLER**

352 TURNPIKE ROAD  
SOUTHBOROUGH, MA 01772  
Phone: (508) 480-9900  
[www.BohlerEngineering.com](http://www.BohlerEngineering.com)

SHEET TITLE:  
**SOIL EROSION  
& SEDIMENT  
CONTROL PLAN**

SHEET NUMBER:  
**C-601**

REVISION 1 - 04/03/2023

P:\2022\MAA220275.00\CADD\DRAWINGS\PLAN SET\CIVIL\SITE PLANS\MAA220275.00-SPPD-08.dwg - LAYOUT: C-601-EROS



**EROSION AND SEDIMENT CONTROL NOTES**

- ALL SEDIMENT AND EROSION CONTROL MEASURES SHALL BE DONE AS SET FORTH IN THE MOST CURRENT STATE SEDIMENT AND EROSION CONTROL MANUAL.
- THOSE AREAS UNDERGOING ACTUAL CONSTRUCTION WILL BE LEFT IN AN UNTREATED OR UNVEGETATED CONDITION FOR A MINIMUM TIME. AREAS SHALL BE PERMANENTLY STABILIZED IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL REQUIREMENTS. AT A MINIMUM, AREAS SHALL BE PERMANENTLY STABILIZED ACCORDING TO THE CURRENT EDITION OF THE STORMWATER POLLUTION PREVENTION PLAN (SWPPP), OR IN THE ABSENCE OF A SWPPP, THEY SHALL BE PERMANENTLY STABILIZED WITHIN 14 DAYS OF FINAL GRADING AND TEMPORARILY STABILIZED WITHIN 30 DAYS OF INITIAL DISTURBANCE OF THE SOIL. IF THE DISTURBANCE IS WITHIN 100 FEET OF A STREAM OR POND, THE AREA SHALL BE STABILIZED WITHIN 7 DAYS OR PRIOR TO ANY STORM EVENT (THIS WOULD INCLUDE WETLANDS).
- SEDIMENT BARRIERS (SILT FENCE, STRAW BARRIERS, ETC.) SHOULD BE INSTALLED PRIOR TO ANY SOIL DISTURBANCE OF THE CONTRIBUTING DRAINAGE AREA ABOVE THEM. MULCH NETTING SHALL BE USED TO ANCHOR MULCH IN ALL AREAS WITH SLOPES GREATER THAN 8%.
- INSTALL SILTATION BARRIER AT TOE OF SLOPE TO FILTER SILT FROM RUNOFF. SEE SILTATION BARRIER DETAILS FOR PROPER INSTALLATION. SILTATION BARRIER WILL REMAIN IN PLACE PER NOTE #5.
- ALL EROSION CONTROL STRUCTURES WILL BE INSPECTED, REPLACED AND/OR REPAIRED EVERY 7 DAYS AND IMMEDIATELY FOLLOWING ANY SIGNIFICANT RAINFALL OR SNOW MELT OR WHEN NO LONGER SERVICEABLE DUE TO SEDIMENT ACCUMULATION OR DECOMPOSITION. SEDIMENT DEPOSITS SHOULD BE REMOVED AFTER EACH STORM EVENT. THEY MUST BE REMOVED WHEN DEPOSITS REACH APPROXIMATELY ONE HALF THE HEIGHT OF THE BARRIER. SEDIMENT CONTROL DEVICES SHALL REMAIN IN PLACE AND BE MAINTAINED BY THE CONTRACTOR UNTIL AREAS UPSLOPE ARE PERMANENTLY STABILIZED. FOR SEDIMENT CONTROL DEVICES THAT ARE WITHIN AREAS SUBJECT TO CONSERVATION COMMISSION JURISDICTION, THE DEVICES SHALL REMAIN IN PLACE AND BE REMOVED IN ACCORDANCE WITH THE ORDER OF CONDITIONS.
- NO SLOPES, EITHER PERMANENT OR TEMPORARY, SHALL BE STEEPER THAN TWO TO ONE (2:1) UNLESS OTHERWISE INDICATED ON THE PLANS. SLOPE PROTECTION FOR SLOPES GREATER THAN 2:1 SHALL BE DESIGNED BY A GEOTECHNICAL ENGINEER.
- IF FINAL SEEDING OF THE DISTURBED AREAS IS NOT COMPLETED 45 DAYS PRIOR TO THE FIRST KILLING FROST, USE TEMPORARY MULCH (DORMANT SEEDING MAY BE ATTEMPTED AS WELL) TO PROTECT THE SITE AND DELAY SEEDING UNTIL THE NEXT RECOMMENDED SEEDING PERIOD.
- TEMPORARY SEEDING OF DISTURBED AREAS THAT HAVE NOT BEEN FINAL GRADED SHALL BE COMPLETED 45 DAYS PRIOR TO THE FIRST KILLING FROST TO PROTECT FROM SPRING RUNOFF PROBLEMS.
- DURING THE CONSTRUCTION PHASE, INTERCEPTED SEDIMENT SHALL BE REMOVED AND DISPOSED OF IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL STANDARDS.
- REVEGETATION MEASURES WILL COMMENCE UPON COMPLETION OF CONSTRUCTION EXCEPT AS NOTED ABOVE. ALL DISTURBED AREAS NOT OTHERWISE STABILIZED WILL BE GRADED, SMOOTHED, AND PREPARED FOR FINAL SEEDING AS FOLLOWS:
  - SIX INCHES, OR DEPTH SPECIFIED ON THE LANDSCAPE PLAN, OF LOAM WILL BE SPREAD OVER DISTURBED AREAS AND SMOOTHED TO A UNIFORM SURFACE.
  - APPLY LIMESTONE AND FERTILIZER ACCORDING TO SOIL TEST. IF SOIL TESTING IS NOT FEASIBLE ON SMALL OR VARIABLE SITES, OR WHERE TIMING IS CRITICAL, FERTILIZER MAY BE APPLIED AT THE RATE OF 800 LB PER ACRE OR 18.4 LB PER 1,000 SF USING 10-20-20 OR EQUIVALENT. APPLY GROUND LIMESTONE (EQUIVALENT TO 50% CALCIUM PLUS MAGNESIUM OXIDE) AT A RATE OF 3 TONS PER ACRE (188 LB PER 1,000 SF).
  - FOLLOWING SEED BED PREPARATION, DITCHES AND BACK SLOPES WILL BE SEED TO A MIXTURE OF 47% CREEPING RED FESCUE, 5% REDTOP, AND 48% TALL FESCUE. THE LAWN AREAS WILL BE SEED TO A PREMIUM TURF MIXTURE OF 44% KENTUCKY BLUEGRASS, 44% CREEPING RED FESCUE, AND 12% PERENNIAL RYEGRASS. SEEDING RATE IS 1.03 LBS PER 1,000 SF LAWN. QUALITY SOO MAY BE SUBSTITUTED FOR SEED WHERE SLOPES DO NOT EXCEED 2:1. SOO ON SLOPES STEEPER THAN 3:1 SHOULD BE PEGGED.
  - STRAW MULCH AT THE RATE OF 70-90 LBS PER 1,000 SF. A HYDRO-APPLICATION OF WOOD OR PAPER FIBER SHALL BE APPLIED FOLLOWING SEEDING. A SUITABLE NON-TOXIC BINDER WILL BE USED ON STRAW MULCH FOR WIND CONTROL.

- ALL TEMPORARY EROSION CONTROL MEASURES SHALL BE REMOVED ONCE THE SITE IS 70% STABILIZED. FOR EROSION CONTROL MEASURES THAT ARE WITHIN AREAS SUBJECT TO CONSERVATION COMMISSION JURISDICTION, THE MEASURES SHALL REMAIN IN PLACE AND BE REMOVED IN ACCORDANCE WITH THE ORDER OF CONDITIONS.
- WETLANDS WILL BE PROTECTED WITH BARRIERS CONSISTING OF STRAW BALES, COMPOST TUBES, SILT FENCE OR A COMBINATION THEREOF.
- ALL AREAS WITHIN 100 FEET OF A FLAGGED WETLAND OR STREAM SHALL HAVE AN EXPOSURE WINDOW OF NOT MORE THAN 7 DAYS.
- ALL AREAS WITHIN 100 FEET OF A FLAGGED WETLAND OR STREAM SHALL FOLLOW APPROPRIATE EROSION CONTROL MEASURES PRIOR TO EACH STORM IF NOT BEING ACTIVELY WORKED.

| LOCATION PROTECTED AREA  | MULCH STRAW   | MULCH RATE (1000 SF)      |
|--|---|---------------------------|
| WINDY AREA   | SHREDDED OR CHOPPED CORNSTALKS STRAW (ANCHORED)             | 185-275 POUNDS 100 POUNDS |
| MODERATE TO HIGH VELOCITY AREAS OR STEEP SLOPES GREATER THAN 3:1 | JUTE MESH OR EXCELSIOR MAT                                  | AS REQUIRED               |
| GREATER THAN 3:1   | (REFER TO GEOTECHNICAL REPORT FOR FINAL DESIGN REQUIREMENT) |                           |

\* A HYDRO-APPLICATION OF WOOD OR PAPER FIBER MAY BE APPLIED FOLLOWING SEEDING. A SUITABLE NON-TOXIC BINDER SHALL BE USED TO ADDITIONAL WIND CONTROL.

\* MULCH ANCHORING: ANCHOR MULCH WITH PEG AND TWINE (1 SQ. YD/BLOCK); MULCH NETTING (AS PER MANUFACTURER); WOOD CELLULOSE FIBER (750 LBS/ACRE); CHEMICAL TACK (AS PER MANUFACTURER'S SPECIFICATIONS); USE OF A SERRATED STRAIGHT DISK, WETTING FOR SMALL AREAS; AND ROAD DITCHES MAY BE PERMITTED.

- PROPOSED LOCATIONS OF SURFACE STORMWATER MANAGEMENT BASINS CAN BE UTILIZED AS A TEMPORARY SEDIMENT TRAP DURING CONSTRUCTION. SEDIMENT TRAPS SHALL BE SIZED AND CONSTRUCTED IN ACCORDANCE WITH ALL LOCAL, STATE, AND FEDERAL REQUIREMENTS.
- TEMPORARY SEDIMENT TRAPS SHALL BE SIZED PER THE CURRENT EDITION OF THE "MASSACHUSETTS EROSION AND SEDIMENT CONTROL GUIDELINES FOR URBAN AND SUBURBAN AREAS" AND PROVIDE A MINIMUM OF 1,800 CF PER ACRE OF TRIBUTARY AREA WITH A MAXIMUM TRIBUTARY AREA OF 5 ACRES, MAINTAIN A 2:1 LENGTH TO WIDTH RATIO, AND NOT EXCEED 5 FT IN HEIGHT. UPON SITE STABILIZATION, ACCUMULATED SEDIMENT SHALL BE REMOVED AND THE TEMPORARY SEDIMENT TRAP EXCAVATED TO 1 FOOT BELOW THE TRAP. THE AREA SHALL THEN BE SCARIFIED TO PREVENT COMPACTION AND PROMOTE INFILTRATION, AND GRADED AND STABILIZED IN ACCORDANCE WITH THE GRADING AND LANDSCAPE PLANS.
- STOCKPILING OF MATERIALS (DIRT, WOOD, CONSTRUCTION MATERIALS, ETC.) MUST REMAIN COVERED AT ALL TIMES TO MINIMIZE ANY DUST PROBLEMS THAT MAY OCCUR WITH ADJACENT PROPERTIES AND TO PROVIDE MAXIMUM PROTECTION AGAINST EROSION RUNOFF.
- EXISTING CATCH BASIN STRUCTURES SHALL BE PROTECTED UNTIL SUCH TIME AS THEY ARE REMOVED.
- THE CONTRACTOR MUST PERFORM DEWATERING (IF REQUIRED), IN ACCORDANCE WITH STATE AND LOCAL REGULATIONS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN AND PAY FOR THE COSTS ASSOCIATED WITH ANY AND ALL NECESSARY DISCHARGE PERMITS ASSOCIATED WITH SAME.

- THE CONTRACTOR MUST LOCATE CONSTRUCTION WASTE MATERIAL STORAGE AREAS TO MINIMIZE EXPOSURE TO STORMWATER. THE CONTRACTOR MUST IMMEDIATELY PLACE CONSTRUCTION WASTE IN ON-SITE STORAGE CONTAINERS UNTIL THAT CONSTRUCTION WASTE IS READY FOR OFF-SITE DISPOSAL. THE CONTRACTOR MUST MAINTAIN SPILL PREVENTION AND RESPONSE EQUIPMENT AND MAKE SAME CONTINUOUSLY AVAILABLE FOR USE BY THE CONTRACTOR'S EMPLOYEES WHO MUST BE PROPERLY TRAINED IN THE APPLICATION OF SPILL PREVENTION AND RESPONSE PROCEDURES.

- EROSION CONTROL NOTES DURING WINTER CONSTRUCTION
- WINTER CONSTRUCTION PERIOD: NOVEMBER 1 THROUGH APRIL 15.
- WINTER EXCAVATION AND EARTHWORK SHALL BE DONE SUCH THAT THE AMOUNT OF AREA OPEN AT ONE TIME IS MINIMIZED TO THE MAXIMUM EXTENT PRACTICABLE AND IN CONFORMANCE WITH THE STORMWATER POLLUTION PREVENTION PLAN SUCH THAT ADEQUATE PROVISIONS ARE EMPLOYED TO CONTROL STORMWATER RUNOFF.
- CONTINUATION OF EARTHWORK OPERATION ON ADDITIONAL AREAS SHALL NOT BEGIN UNTIL THE EXPOSED SOIL SURFACE ON THE AREA BEING WORKED HAS BEEN STABILIZED SUCH THAT NO LARGER AREA OF THE SITE IS WITHOUT EROSION CONTROL PROTECTION AS LISTED IN ITEM 2 ABOVE.

- AN AREA SHALL BE CONSIDERED TO HAVE BEEN TEMPORARILY STABILIZED WHEN EXPOSED SURFACES HAVE BEEN EITHER MULCHED WITH STRAW OR STRAW AT A RATE OF 100 LB. PER 1,000 SQUARE FEET (WITH OR WITHOUT SEEDING) OR DORMANT SEEDING, MULCHED AND ADEQUATELY ANCHORED BY AN APPROVED ANCHORING TECHNIQUE.
- FOR AREAS WHERE CONSTRUCTION ACTIVITIES HAVE CEASED FOR A PERIOD EXCEEDING 14 DAYS BETWEEN THE DATES OF NOVEMBER 1ST AND APRIL 15TH, LOAM OR SEED WILL NOT BE REQUIRED. THE SLOPES SHALL BE FINE GRADED AND EITHER PROTECTED WITH MULCH OR TEMPORARILY SEEDING. IF THE EXPOSED AREA HAS BEEN LOAMED, FINAL GRADED AND IS SMOOTH, THEN THE AREA MAY BE DORMANT SEEDING AT A RATE OF 200-300% HIGHER THAN SPECIFIED FOR PERMANENT SEED AND THEN MULCHED AS APPLICABLE. SLOPES SHALL NOT BE LEFT UNSTABILIZED OVER THE WINTER OR IN AREAS WHERE WORK HAS CEASED FOR MORE THAN 14 DAYS UNLESS TREATED IN THE ABOVE MANNER. UNTIL SUCH TIME AS WEATHER CONDITIONS ALLOW, DITCHES TO BE FINISHED WITH THE PERMANENT SURFACE TREATMENT. EROSION SHALL BE CONTROLLED BY THE INSTALLATION OF SEDIMENT BARRIERS OR STONE CHECK DAMS IN ACCORDANCE WITH THE STANDARD DETAILS.

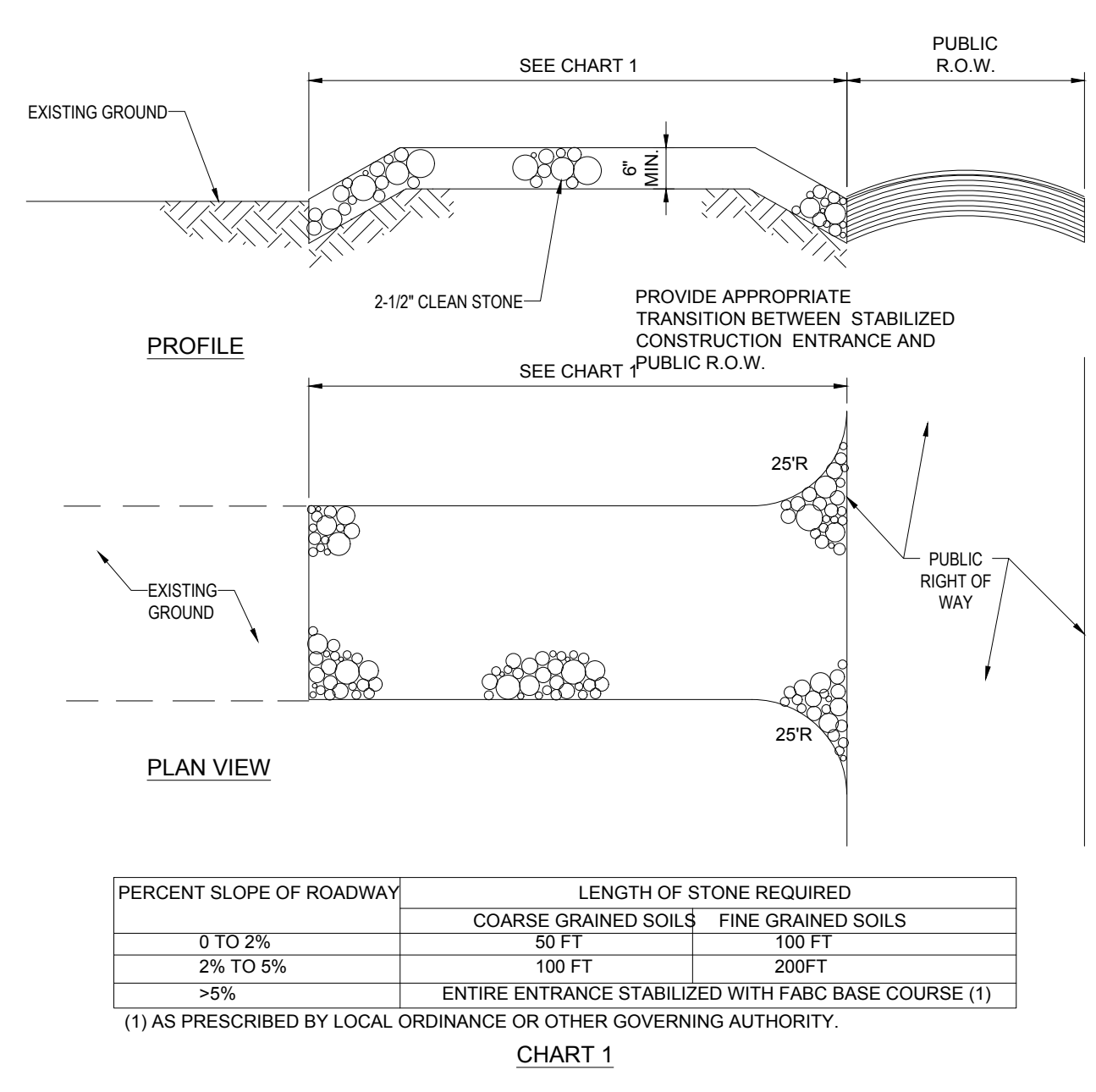
- MULCHING REQUIREMENTS:
  - BETWEEN THE DATES OF NOVEMBER 1ST AND APRIL 15TH ALL MULCH SHALL BE ANCHORED BY EITHER PEG LINE, MULCH NETTING OR WOOD CELLULOSE FIBER.
  - MULCH NETTING SHALL BE USED TO ANCHOR MULCH IN ALL DRAINAGE WAYS WITH A SLOPE GREATER THAN 3% FOR SLOPE EXPOSED TO DIRECT WINDS AND FOR ALL OTHER SLOPES GREATER THAN 8%.
  - MULCH NETTING SHALL BE USED TO ANCHOR MULCH IN ALL AREAS WITH SLOPES GREATER THAN 15% AFTER OCTOBER 1ST THE SAME APPLICABLE FOR ALL SLOPES GREATER THAN 8%.
- ALL DISTURBED AREAS SHALL BE STABILIZED IN ACCORDANCE WITH THE STORMWATER PREVENTION PLAN.
- DURING THE WINTER CONSTRUCTION PERIOD ALL SNOW SHALL BE REMOVED FROM AREAS OF SEEDING AND MULCHING PRIOR TO PLACEMENT.

**GENERAL EROSION AND SEDIMENT CONTROL NOTES**

- THE GENERAL NOTES MUST BE INCLUDED AS PART OF THIS ENTIRE DOCUMENT PACKAGE AND ARE PART OF THE CONTRACT DOCUMENTS. THE GENERAL NOTES ARE REFERENCED HEREIN, AND THE CONTRACTOR MUST REFER TO THEM AND FULLY COMPLY WITH THESE NOTES. IN THEIR ENTIRETY, THE CONTRACTOR MUST BE FAMILIAR WITH AND ACKNOWLEDGE FAMILIARITY WITH ALL OF THE GENERAL NOTES AND ALL OF THE PLANS' SPECIFIC NOTES.
- EROSION CONTROL MEASURES MUST CONFORM TO THE STATE, LOCAL, AND FEDERAL GUIDELINES FOR URBAN EROSION AND SEDIMENT CONTROL, UNLESS OTHERWISE NOTED, OR UNLESS ENGINEER CLEARLY AND SPECIFICALLY, IN WRITING, DIRECTS OTHERWISE. INSTALLATION OF EROSION CONTROL, CLEARING, AND SITE WORK MUST BE PERFORMED EXACTLY AS INDICATED IN THE EROSION CONTROL CONSTRUCTION NOTES.
- THE DISTURBED LAND AREA OF THIS SITE IS APPROXIMATELY XX.XXX ACRES.
- THE FOLLOWING EROSION CONTROL MEASURES ARE PROPOSED FOR THIS SITE:
  - STABILIZED CONSTRUCTION ENTRANCE/EXIT - A TEMPORARY GRAVEL CONSTRUCTION ENTRANCE/EXIT IS TO BE INSTALLED AT THE DESIGNATED LOCATION SHOWN ON THE PLAN. THIS AREA MUST BE GRADED SO THAT RUNOFF WATER WILL BE RETAINED ON-SITE. SEDIMENT FENCE - INSTALL SILT FENCE(S) AND/OR SILT SOCK AROUND ALL OF THE DOWNSLOPE PERIMETERS OF THE SITE, TEMPORARY FILL AND SOIL STOCKPILES.
  - INSTALL FILTER FABRIC DROP INLET PROTECTION AROUND EACH DRAINAGE INLET AS DRAINAGE STRUCTURES ARE INSTALLED TO REDUCE THE QUANTITY OF SEDIMENT. INSTALL TEMPORARY INLET PROTECTION ON INLETS DOWNSLOPE FROM DISTURBANCE, WHICH MAY BE BEYOND THE LIMITS OF DISTURBED AREA.
- INSTALLATION OF EROSION CONTROL DEVICES MUST BE IN ACCORDANCE WITH ALL OF THE MANUFACTURER'S RECOMMENDATIONS.
- THE CONTRACTOR MUST INSPECT EROSION CONTROL MEASURES WEEKLY. THE CONTRACTOR MUST REMOVE ANY SILT DEPOSITS GREATER THAN 6" OR HALF THE OF THE EROSION CONTROL BARRIER'S HEIGHT COLLECTED ON THE FILTER FABRIC AND/OR SILT SOCK BARRIERS AND EXCAVATE AND REMOVE ANY SILT FROM DROP INLET PROTECTION.
- THE CONTRACTOR MUST APPLY TEMPORARY SEED AND MULCH TO ALL DISTURBED AREAS THAT WILL NOT BE BROUGHT TO FINISHED GRADE AND VEGETATED WITHIN 7 DAYS. WHEN AREAS ARE DISTURBED AFTER THE GROWING SEASON, THE CONTRACTOR MUST STABILIZE SAME WITH GEOTEXTILE FABRIC AND MAINTAIN SAME IN STRICT ACCORDANCE WITH BEST MANAGEMENT PRACTICES.
- THE CONTRACTOR MUST INSTALL ADDITIONAL EROSION CONTROL MEASURES IF ENGINEER SO REQUIRES, TO PREVENT ANY, INCLUDING THE INCIDENTAL DISCHARGE OF SILT-LADEN RUNOFF FROM EXITING THE SITE.
- THE CONTRACTOR MUST BE RESPONSIBLE FOR INSPECTING AND MAINTAINING ALL EROSION CONTROL MEASURES ON THE SITE UNTIL PERMANENT PAVING AND TURFLANDSCAPING IS ESTABLISHED. THE COSTS OF INSTALLING AND MAINTAINING THE EROSION CONTROL MEASURES MUST BE INCLUDED IN THE BID PRICE FOR THE SITE WORK AND THE CONTRACTOR IS RESPONSIBLE FOR ALL SUCH COSTS.
- THE CONTRACTOR MUST CONTINUE TO MAINTAIN ALL EROSION CONTROL MEASURES UNTIL THE COMPLETION OF CONSTRUCTION AND THE ESTABLISHMENT OF VEGETATION.
- THE CONTRACTOR MUST REMOVE EROSION CONTROL MEASURES, SILT AND DEBRIS AFTER ESTABLISHING PERMANENT VEGETATION COVER OR OTHER INSTALLING A DIFFERENT, SPECIFIED METHOD OF STABILIZATION.
- THIS PLAN REPRESENTS THE MINIMUM LEVEL OF IMPLEMENTATION OF TEMPORARY EROSION CONTROL AND SEDIMENTATION CONTROL FACILITIES. MEASURES AND STRUCTURES ADDITIONAL FACILITIES, MEASURES AND STRUCTURES MUST BE INSTALLED WHERE NECESSARY TO COMPLY WITH ALL APPLICABLE CODES AND STANDARDS AND/OR TO PREVENT ANY, INCLUDING THE INCIDENTAL DISCHARGE OF SILT-LADEN RUNOFF FROM EXITING THE SITE.
- THE CONTRACTOR MUST PROTECT ALL EXISTING TREES AND SHRUBS. THE CONTRACTOR MUST REFER TO THE LANDSCAPE AND/OR DEMOLITION PLAN(S) FOR TREE PROTECTION, FENCE LOCATIONS AND DETAILS.
- THE CONTRACTOR MUST REFER TO GRADING PLANS FOR ADDITIONAL INFORMATION.
- THE CONTRACTOR MUST CLEAN EXISTING AND PROPOSED DRAINAGE STRUCTURES AND INTERCONNECTING PIPES ON OR OFF-SITE AS THE JURISDICTIONAL AGENCY REQUIRES, BOTH AT THE TIME OF SITE STABILIZATION AND AT END OF PROJECT.
- SOIL EROSION CONTROL MEASURES MUST BE ADJUSTED OR RELOCATED BY THE CONTRACTOR AS IDENTIFIED DURING SITE OBSERVATION IN ORDER TO MAINTAIN THE COMPLETE EFFECTIVENESS OF ALL CONTROL MEASURES.
- THE CONTRACTOR MUST IDENTIFY, ON THE PLAN, THE LOCATION OF WASTE CONTAINERS, FUEL STORAGE TANKS, CONCRETE WASHOUT AREAS AND ANY OTHER LOCATIONS WHERE HAZARDOUS MATERIALS ARE STORED.

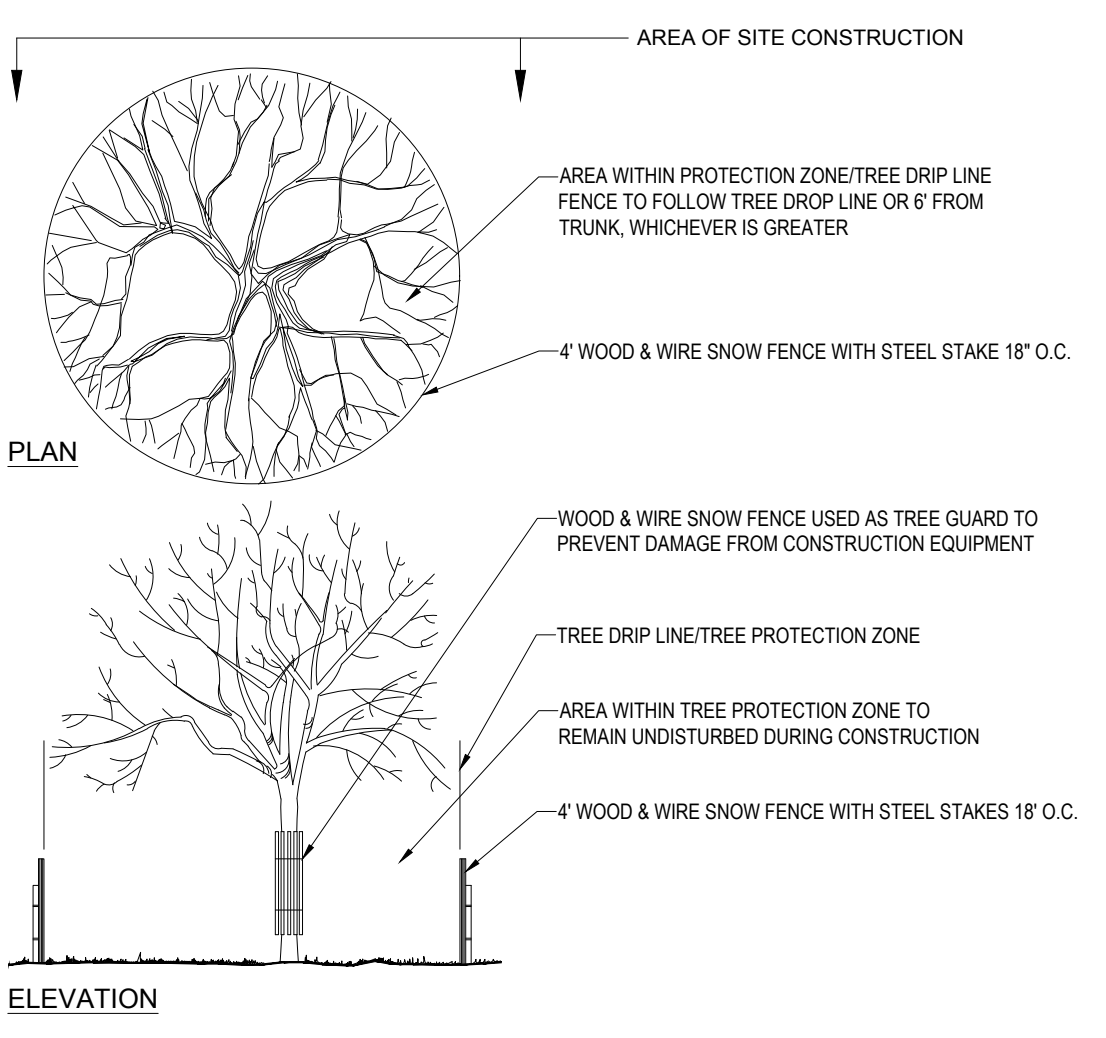
- THE FOLLOWING CONSTRUCTION SEQUENCE IS RECOMMENDED:
- INSTALLATION OF STABILIZED CONSTRUCTION ENTRANCE/EXIT (AS SHOWN)
  - INSTALLATION OF EROSION CONTROL BARRIER (STRAW BALES AND SILT FENCE) (AS SHOWN)
  - INSTALLATION OF INLET PROTECTION IN STREET (AS SHOWN)
  - DEMOLITION OF EXISTING SITE STRUCTURES (SEE DEMOLITION PLAN)
  - DEMOLITION OF EXISTING SITE PAVEMENT AND AMENITIES (SEE DEMOLITION PLAN)
  - CLEARING AND GRUBBING
  - INSTALLATION OF TEMPORARY SWALES AND SEDIMENT BASINS
  - EARTHWORK AND EXCAVATION/FILLING AS NECESSARY
  - CONSTRUCTION OF UTILITIES
  - STABILIZE PERMANENT LAWN AREAS AND SLOPES WITH TEMPORARY SEEDING
  - INSTALLATION OF INLET PROTECTION OF ON-SITE UTILITIES (AS SHOWN)
  - CONSTRUCTION OF BUILDINGS
  - CONSTRUCTION OF ALL CURBING AND LANDSCAPE ISLANDS AS INDICATED ON THE PLANS
  - SPREAD TOPSOIL ON SLOPED AREAS AND SEED AND MULCH
  - FINAL GRADING OF ALL SLOPED AREAS
  - PLACE 6" TOPSOIL ON SLOPES AFTER FINAL GRADING COMPLETED. FERTILIZE, SEED, AND MULCH SEED MIXTURE TO BE INSTALLED AS REQUIRED.
  - REMOVAL OF THE TEMPORARY SEDIMENT BASINS
  - PAVE PARKING LOT
  - LANDSCAPING PER LANDSCAPING PLAN
  - REMOVE EROSION CONTROLS AS DISTURBED AREAS BECOME STABILIZED TO 70% STABILIZATION OR GREATER

**RECOMMENDED CONSTRUCTION SEQUENCE**

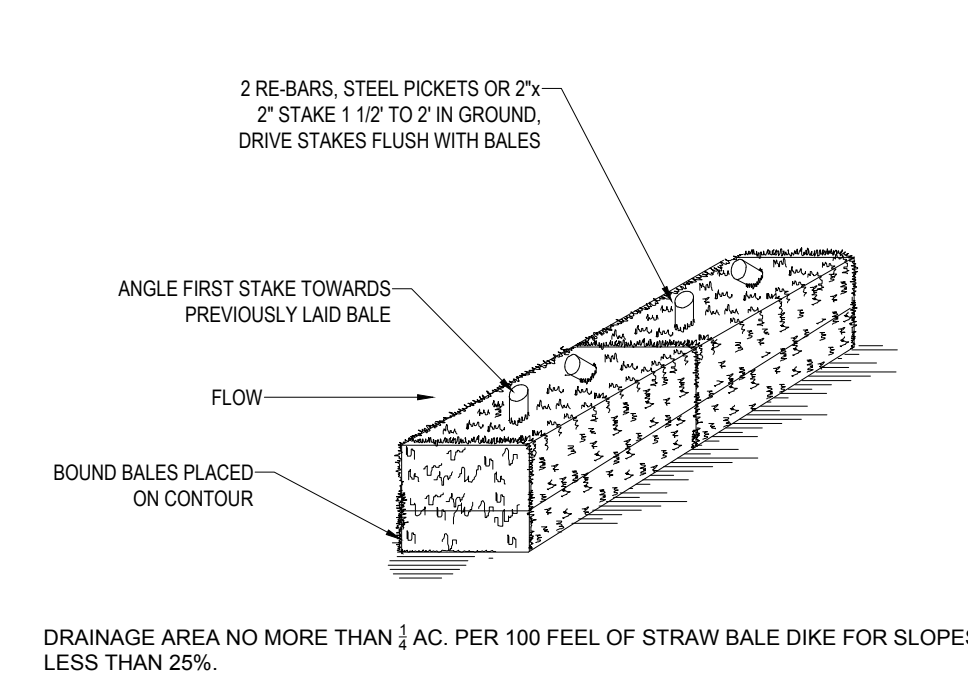


| PERCENT SLOPE OF ROADWAY | LENGTH OF STONE REQUIRED                             |                    |
|--------------------------|--|--------------------|
|                          | COARSE GRAINED SOILS                                 | FINE GRAINED SOILS |
| 0 TO 2%                  | 50 FT  | 100 FT             |
| 2% TO 5%                 | 100 FT   | 200FT              |
| >5%                      | ENTIRE ENTRANCE STABILIZED WITH FABC BASE COURSE (1) |                    |

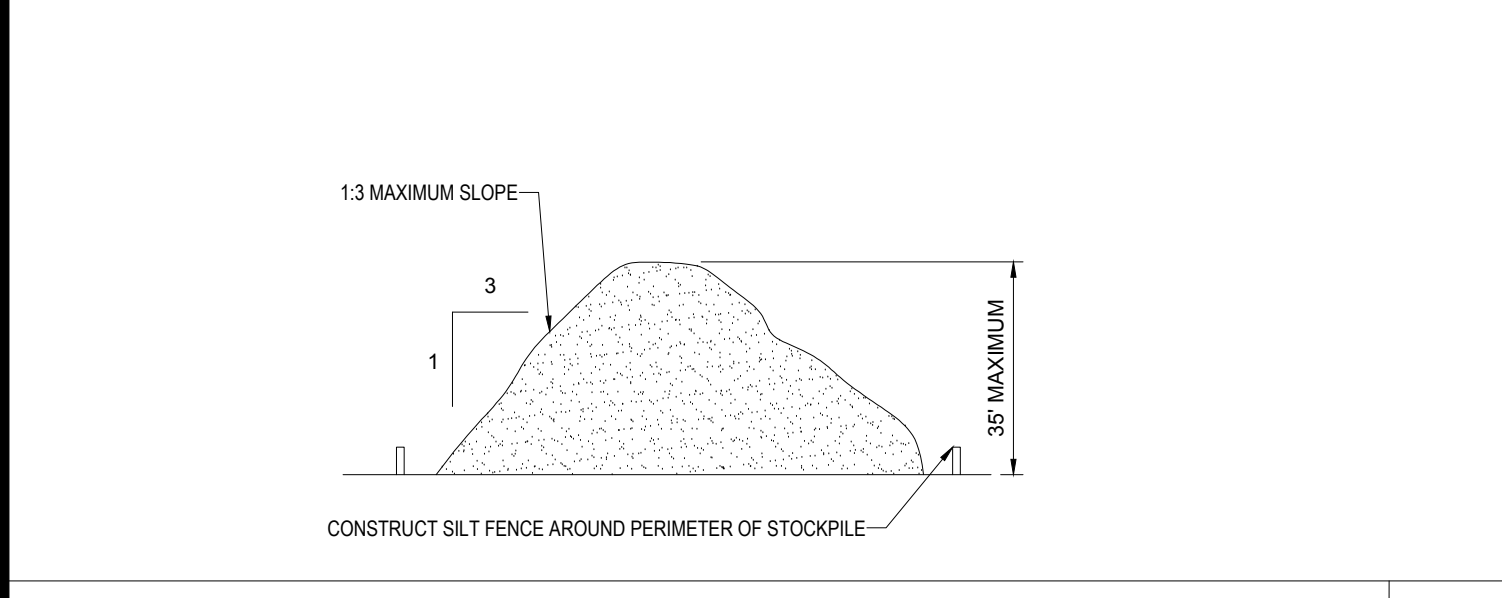
(1) AS PRESCRIBED BY LOCAL ORDINANCE OR OTHER GOVERNING AUTHORITY.



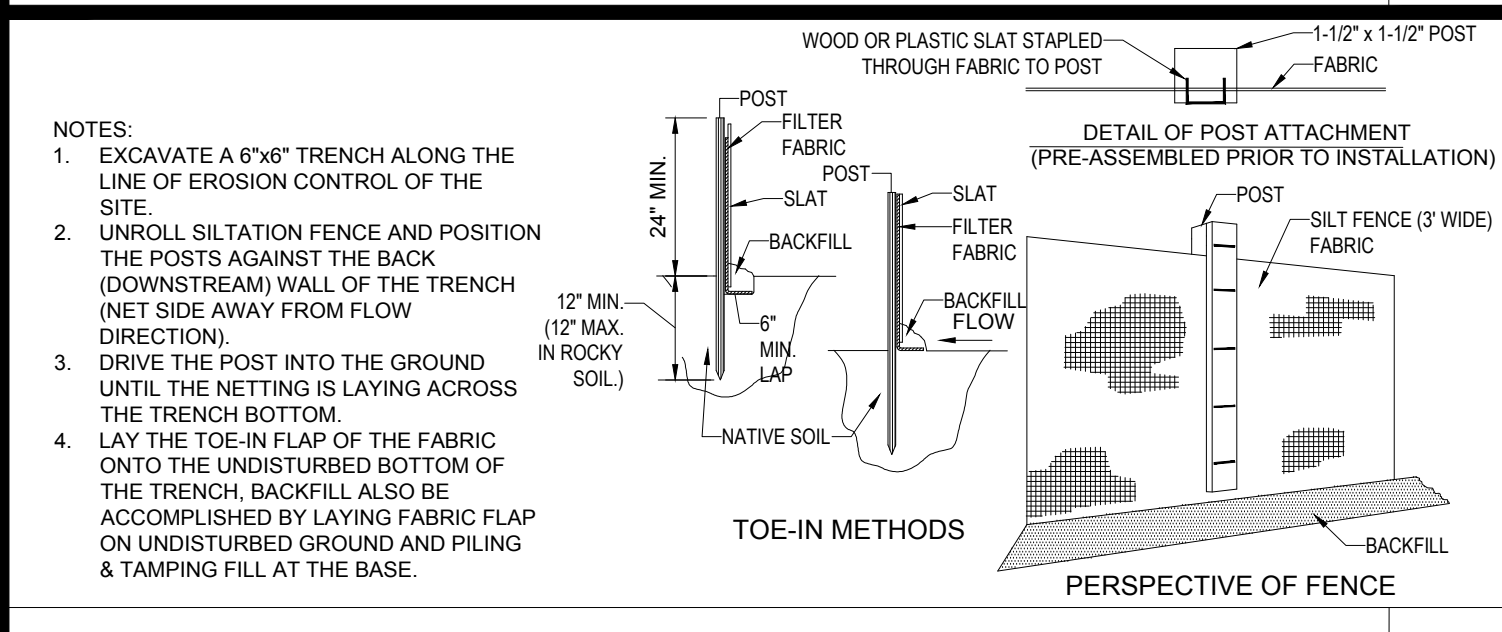
**TREE PROTECTION DURING SITE CONSTRUCTION**



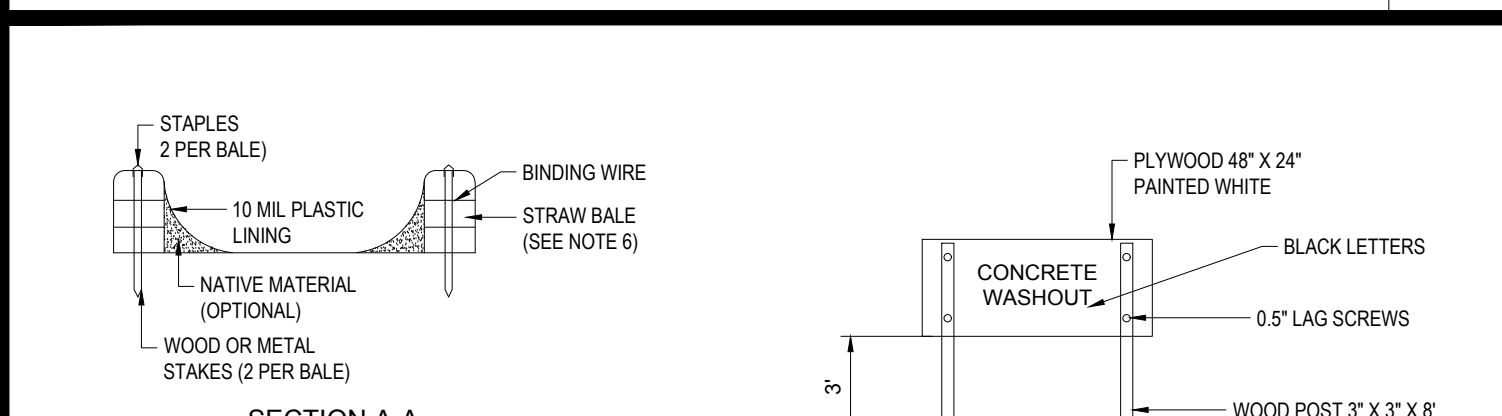
- NOTES:
- BALES SHALL BE PLACED AT THE TOP OF A SLOPE OR ON THE CONTOUR AND IN A ROW WITH ENDS TIGHTLY ABUTTING THE ADJACENT BALES.
  - EACH BALE SHALL BE PLACED SO THE BINDINGS ARE HORIZONTAL.
  - BALES SHALL BE SECURELY ANCHORED IN PLACE BY EITHER TWO STAKES OR RE-BARS DRIVEN THROUGH THE BALE. THE FIRST STAKE IN EACH BALE SHALL BE DRIVEN TOWARD THE PREVIOUSLY LAID BALE AT AN ANGLE TO FORCE THE BALES TOGETHER. STAKES SHALL BE DRIVEN FLUSH WITH THE BALE.
  - INSPECTION SHALL BE FREQUENT AND REPAIR REPLACEMENT SHALL BE PROMPTLY AS NEEDED.
  - BALES SHALL BE REMOVED WHEN THEY HAVE SERVED THEIR USEFULNESS SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.



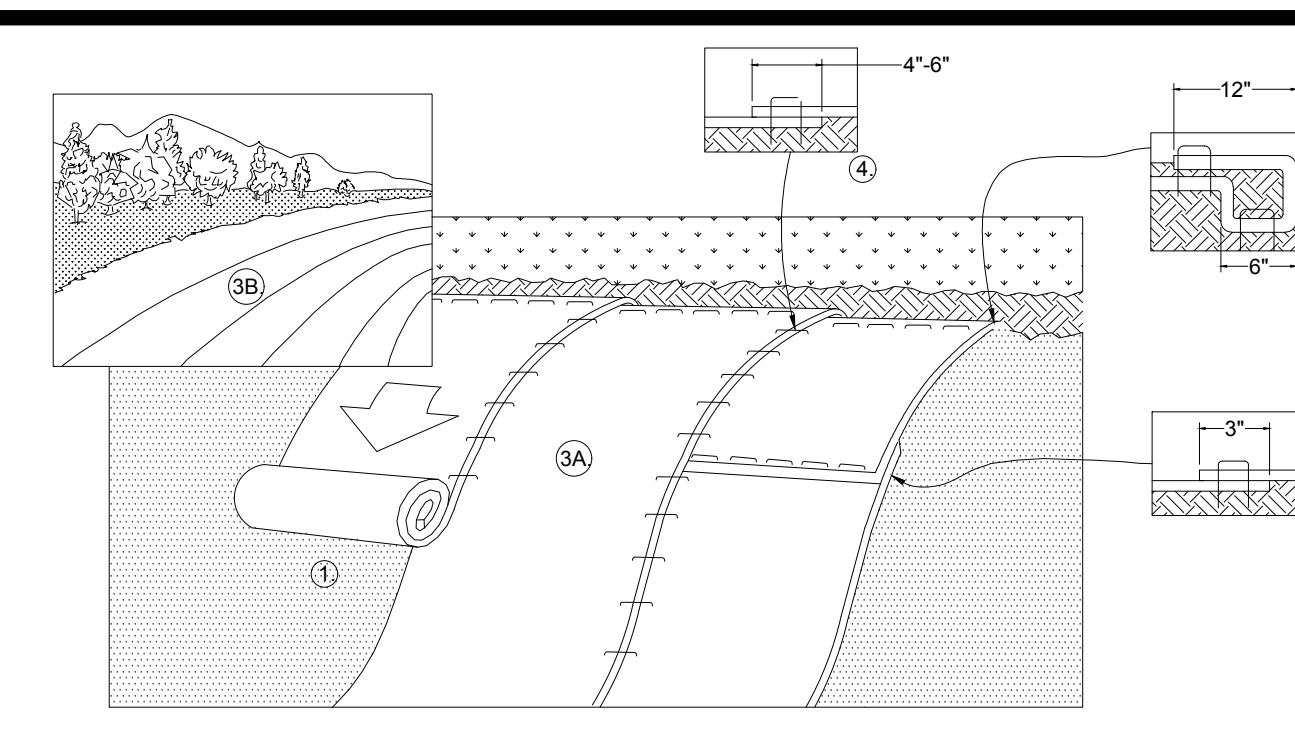
**TEMPORARY STOCKPILE**



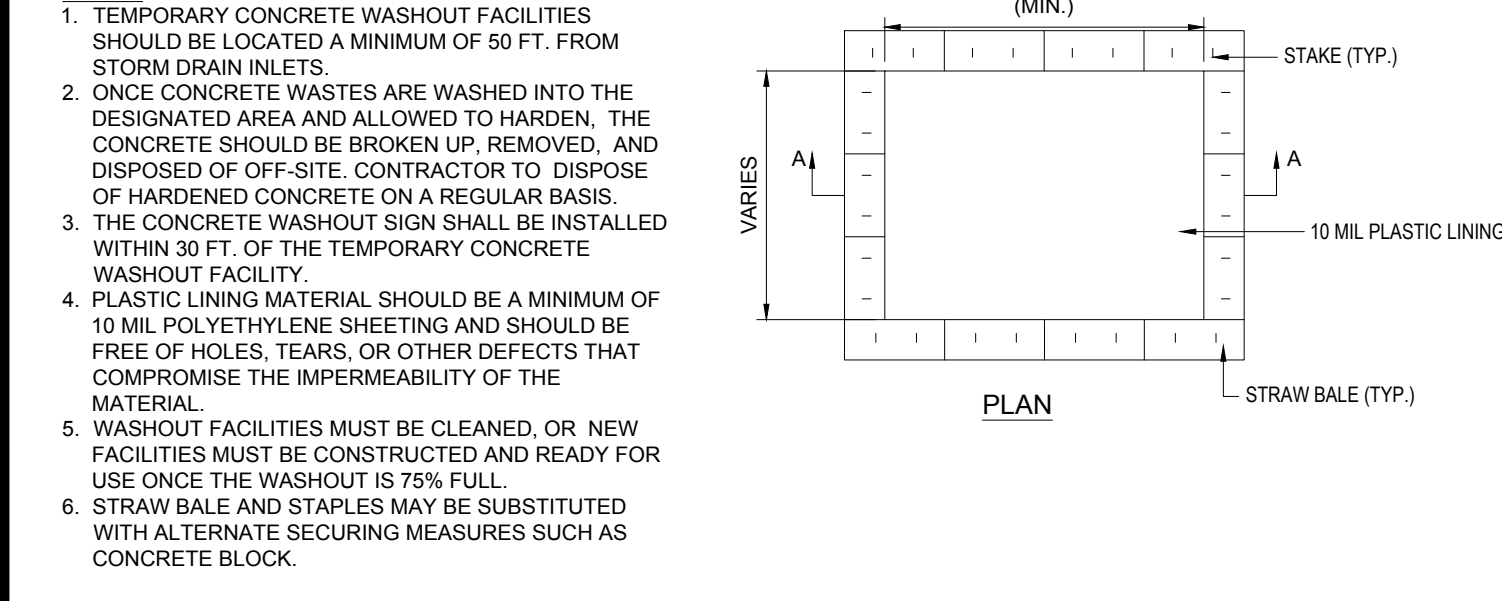
**TYP. SILTATION FENCE**



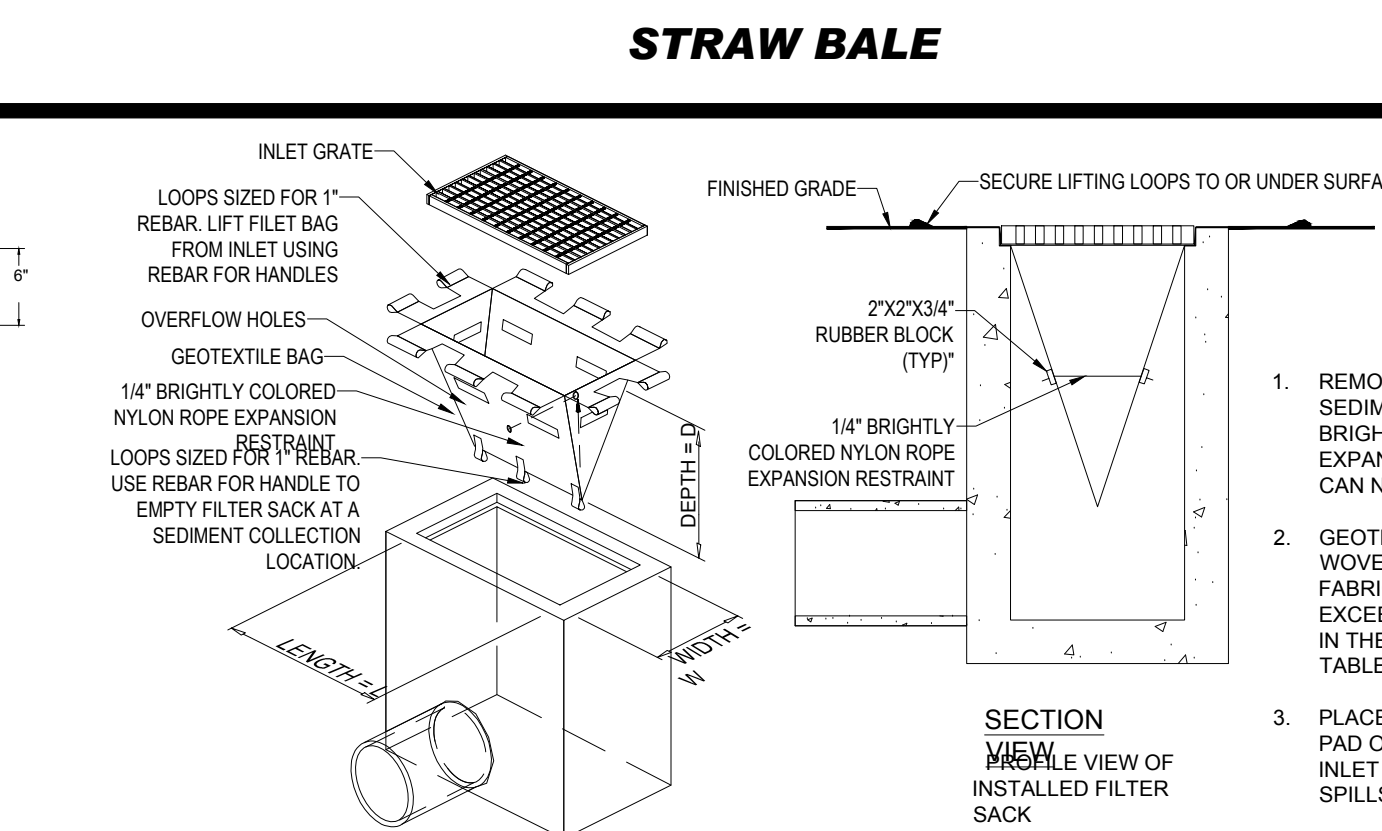
**STABILIZED CONSTRUCTION ENTRANCE**



**CONCRETE WASHOUT SIGN DETAIL (OR EQUIVALENT)**



**CONCRETE WASTE MANAGEMENT AREA**



**STRAW BALE**

| LOW TO MODERATE FLOW GEOTEXTILE FABRIC SPECIFICATION TABLE  |             | TEST METHOD |                   | UNITS |  |
|---|-------------|-------------|-------------------|-------|--|
| GRAB TENSILE STRENGTH                                       | ASTM D-4632 | 300         | LBS               |       |  |
| GRAB TENSILE ELONGATION                                     | ASTM D-4632 | 20%         |                   |       |  |
| PUNCTURE  | ASTM D-4633 | 120         | LBS               |       |  |
| MULLEN BURST  | ASTM D-3786 | 800         | PSI               |       |  |
| TRAPEZOID TEAR  | ASTM D-4533 | 120         | LBS               |       |  |
| UV RESISTANCE   | ASTM D-4355 | 80%         |                   |       |  |
| APPARENT OPENING SIZE                                       | ASTM D-4751 | 40          | US SIEVE          |       |  |
| FLOW RATE   | ASTM D-4491 | 40          | GAL/MIN/SQ FT     |       |  |
| PERMITTIVITY  | ASTM D-4491 | 0.85        | SEC <sup>-1</sup> |       |  |
| MODERATE TO HIGH FLOW GEOTEXTILE FABRIC SPECIFICATION TABLE |             | TEST METHOD |                   | UNITS |  |
| GRAB TENSILE STRENGTH                                       | ASTM D-4632 | 205         | LBS               |       |  |
| GRAB TENSILE ELONGATION                                     | ASTM D-4632 | 20%         |                   |       |  |
| PUNCTURE  | ASTM D-4633 | 135         | LBS               |       |  |
| MULLEN BURST  | ASTM D-3786 | 420         | PSI               |       |  |
| TRAPEZOID TEAR  | ASTM D-4533 | 45          | LBS               |       |  |
| UV RESISTANCE   | ASTM D-4355 | 90%         |                   |       |  |
| APPARENT OPENING SIZE                                       | ASTM D-4751 | 20          | US SIEVE          |       |  |
| FLOW RATE   | ASTM D-4491 | 200         | GAL/MIN/SQ FT     |       |  |
| PERMITTIVITY  | ASTM D-4491 | 1.5         | SEC <sup>-1</sup> |       |  |

**FILTER SACS (GRADED INLETS)**

**EROSION CONTROL BLANKET 2:1 SLOPES (SLOPE INSTALLATION)**

- PREPARE SOIL BEFORE INSTALLING BLANKETS, INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED.
- BEAR AT THE TOP OF THE SLOPE BY ANCHORING THE BLANKET IN A 6\"/>

**BOHLER**  
 SITE CIVIL AND CONSULTING ENGINEERING  
 PROGRAM MANAGEMENT  
 LANDSCAPE ARCHITECTURE  
 SUSTAINABLE DESIGN  
 PERMITTING SERVICES  
 TRANSPORTATION SERVICES

**REVISIONS**

| REV | DATE       | COMMENT           | CHECKED BY | DRAWN BY |
|-----|------------|-------------------|------------|----------|
| 1   | 04/03/2023 | PER TOWN COMMENTS | JJ         | JF       |

**811**  
 Know what's below.  
 Call before you dig.  
 ALWAYS CALL 811  
 It's fast. It's free. It's the law.

**PERMIT SET**

THIS DRAWING IS INTENDED FOR MUNICIPAL AND/OR AGENCY REVIEW AND APPROVAL. IT IS NOT INTENDED AS A CONSTRUCTION DOCUMENT UNLESS INDICATED OTHERWISE.

PROJECT No.: MAA202275.00  
 DRAWN BY: CDF/JR  
 CHECKED BY: JFR/MM  
 DATE: 04/03/2023  
 CAD ID: MAA20275.00-SFPD-08

**PROPOSED SITE PLAN DOCUMENTS**

PROPOSED BANK DEVELOPMENT  
 MAP: 17 LOT: 63  
 431 MAIN STREET,  
 TOWN OF READING,  
 MIDDLESEX COUNTY,  
 MASSACHUSETTS

**BOHLER**  
 352 TURNPIKE ROAD  
 SOUTHBOROUGH, MA 01772  
 Phone: (508) 480-9900  
 www.BohlerEngineering.com

SHEET TITLE:  
**SOIL EROSION & SEDIMENT CONTROL NOTES & DETAILS**  
 SHEET NUMBER:

**C-602**

REVISION 1 - 04/03/2023





WASHINGTON STREET  
(PUBLIC - VARIABLE WIDTH ROW)

TWO WAY TRAFFIC  
(ASPHALT ROADWAY)

CHASE  
STANDARD SIDE ENTRY  
+/- 3,293 S.F.  
FFE=97.00

N/F LANDS OF  
CHARLES W. & SUSAN GRAY  
BK. 53273, PG. 565.

N/F LANDS OF  
413 MAIN STREET LLC  
BK. 26135, PG. 322.

MAIN STREET  
(AKA ROUTE 28)  
(PUBLIC - VARIABLE WIDTH ROW)  
(PER REF #3)

TWO WAY TRAFFIC  
(ASPHALT ROADWAY)

**LIGHTING NOTES**

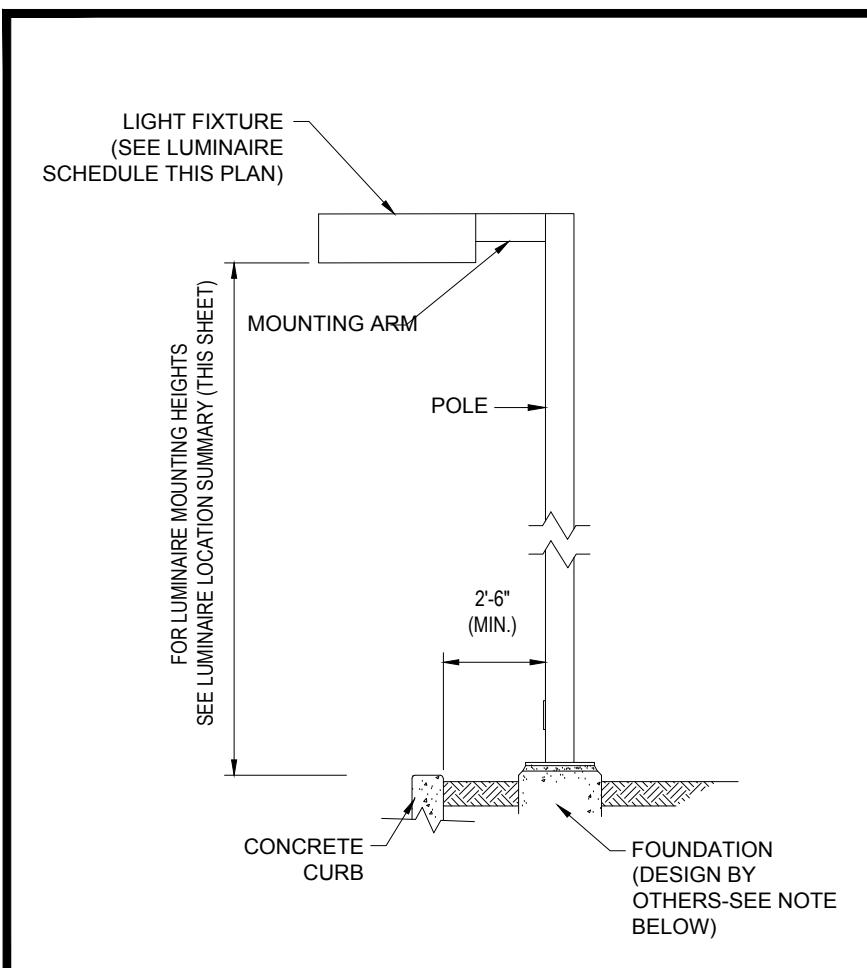
- THIS LIGHTING PLAN DEPICTS PROPOSED SUSTAINED ILLUMINATION LEVELS CALCULATED USING DATA PROVIDED BY THE NOTED MANUFACTURER(S). ACTUAL SUSTAINED SITE ILLUMINATION LEVELS AND PERFORMANCE OF LUMINAIRES MAY VARY DUE TO VARIATIONS IN WEATHER, ELECTRICAL VOLTAGE, TOLERANCE IN LAMPS, THE SERVICE LIFE OF EQUIPMENT AND LUMINAIRES AND OTHER RELATED VARIABLE FIELD CONDITIONS.
- THE LIGHT LOSS FACTORS USED IN THESE LIGHTING CALCULATIONS ARE 0.90 FOR ALL LED LUMINAIRES, 0.80 FOR ALL HIGH PRESSURE SODIUM LUMINAIRES OR 0.72 FOR ALL METAL HALIDE LUMINAIRES UNLESS OTHERWISE SPECIFIED. THESE FACTORS ARE INDICATIVE OF TYPICAL LIGHTING INDUSTRY MODELING STANDARDS.
- THE LIGHTING VALUES AND CALCULATION POINTS DEPICTED ON THIS PLAN ARE ALL ANALYZED ON A HORIZONTAL GEOMETRIC PLANE AT ELEVATION ZERO (GROUND LEVEL) UNLESS OTHERWISE NOTED. THE VALUES DEPICTED ON THIS PLAN ARE IN FOOT-CANDLES.
- THE LUMINAIRES, LAMPS AND LENSES MUST BE REGULARLY INSPECTED/MAINTAINED TO ENSURE THAT THEY FUNCTION PROPERLY. THIS WORK SHOULD INCLUDE, BUT NOT BE LIMITED TO, FREQUENT VISUAL INSPECTIONS, CLEANING OF LENSES, AND RELAMPING (IF NECESSARY) AT LEAST ONCE EVERY SIX (6) MONTHS. FAILURE TO FOLLOW THE ABOVE STEPS COULD CAUSE THE LUMINAIRES, LAMPS AND LENSES TO FAIL PROPERLY TO FUNCTION.
- WHERE APPLICABLE, THE EXISTING CONDITION LIGHT LEVELS ILLUSTRATED ARE REPRESENTATIVE OF AN APPROXIMATION UTILIZING LABORATORY DATA FOR SIMILAR FIXTURES, UNLESS ACTUAL FIELD MEASUREMENTS ARE TAKEN WITH A LIGHT METER AND ARE, CONSEQUENTLY, APPROXIMATIONS ONLY. DUE TO FACTORS SUCH AS FIXTURE MAINTENANCE, EQUIPMENT TOLERANCES, WEATHER CONDITIONS, ETC., ACTUAL LIGHT LEVELS MAY DIFFER. EXISTING LIGHT LEVELS DEPICTED ON THIS PLAN SHOULD BE CONSIDERED APPROXIMATE.
- THIS LIGHTING PLAN IS INTENDED TO SHOW THE LOCATIONS AND TYPE OF LUMINAIRES, ONLY. POWER SYSTEM, CONDUITS, WIRING, VOLTAGES AND OTHER ELECTRICAL COMPONENTS ARE THE RESPONSIBILITY OF THE ARCHITECT, MEP AND/OR LIGHTING CONTRACTOR, AS INDICATED IN THE CONSTRUCTION CONTRACT DOCUMENTS. THESE ITEMS MUST BE INSTALLED AS REQUIRED BY STATE AND LOCAL REGULATIONS. LIGHT POLE BASES ARE THE RESPONSIBILITY OF THE STRUCTURAL ENGINEER, AS INDICATED IN THE CONSTRUCTION CONTRACT DOCUMENTS. CONTRACTOR IS RESPONSIBLE FOR INSTALLING LIGHTING FIXTURES AND APPURTENANCES IN ACCORDANCE WITH ALL APPLICABLE BUILDING AND ELECTRICAL CODES AND ALL OTHER APPLICABLE RULES, REGULATIONS, LAWS AND STATUTES.
- CONTRACTOR MUST BRING TO DESIGNER'S ATTENTION, PRIOR TO THE COMMENCEMENT OF CONSTRUCTION, ANY LIGHT LOCATIONS THAT CONFLICT WITH DRAINAGE, UTILITIES, OR OTHER STRUCTURES.
- IT IS THE LIGHTING CONTRACTOR'S RESPONSIBILITY TO COORDINATE WITH THE PROJECT ARCHITECT OR OWNER REGARDING THE POWER SOURCE(S) FROM WITHIN THE BUILDING, AND TIMING DEVICES NECESSARY TO MEET THE DESIGN INTENT.
- THE LIGHTING CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE CONTRACTOR REQUIREMENTS INDICATED IN THE SITE PLAN, INCLUDING BUT NOT LIMITED TO, GENERAL NOTES, GRADING AND UTILITY NOTES, SITE SAFETY, AND ALL GOVERNMENTAL RULES, LAWS, ORDINANCES, REGULATIONS AND THE LIKE.
- THE CONTRACTOR MUST VERIFY THAT INSTALLATION OF LIGHTING FIXTURES COMPLIES WITH THE REQUIREMENTS FOR SEPARATION FROM OVERHEAD ELECTRICAL WIRING PER STATE REGULATIONS.
- WHEN A BANK ATM IS INCLUDED IN THE PLAN, THE LIGHTING DESIGN REPRESENTS BOHLER'S UNDERSTANDING AND INTERPRETATION OF THE REGULATORY LIGHTING LEVELS INTENDED BY PUBLISHED STANDARDS.
- UPON OWNER'S ACCEPTANCE OF THE COMPLETED PROJECT, THE OWNER SHALL BE RESPONSIBLE FOR ALL MAINTENANCE, SERVICING, REPAIR AND INSPECTION OF THE LIGHTING SYSTEM AND ALL OF ITS COMPONENTS AND RELATED SYSTEMS, TO ENSURE ADEQUATE LIGHTING LEVELS ARE PRESENT AND FUNCTIONING AT ALL TIMES.

**NUMERIC SUMMARY**

| LABEL            | CALCTYPE    | UNITS | AVG  | MAX  | MIN | AVG/MIN | MAX/MIN |
|------------------|-------------|-------|------|------|-----|---------|---------|
| AREA SUMMARY     | ILLUMINANCE | FC    | 3.52 | 12.0 | 0.5 | 7.04    | 24.00   |
| ENTRANCE - 50 FT | ILLUMINANCE | FC    | 3.68 | 10.7 | 0.7 | 5.26    | 15.29   |

**LUMINAIRE SCHEDULE**

| SYMBOL | QTY | ARRANGEMENT | LUMENS | LLF  | DESCRIPTION   |
|--------|-----|-------------|--------|------|---|
| ⊙      | 2   | SINGLE      | 21737  | 0.90 | LITHONIA LIGHTING RSX2 LED TYPE 3 AREA LIGHT WITH SHIELD MOUNTED @ 20'; RSX2-LED-P4-40K-R3-RS |
| ⊠      | 4   | BUILDING    | 1035   | 0.90 | LUMIERE LED WALL PACK MOUNTED @ 10'; 8004-WZ-RW-LED-4080-W-W-CS-1-1-UNV-WIS                   |
| ⊡      | 1   | BUILDING    | 6038   | 0.90 | LUMARK MAXX LED WALL PACK MOUNTED @ 10'; XT08S-WZ-RS-SIM-20-CSP                               |
| ⊙      | 1   | CANOPY      | 1670   | 0.90 | ILLUMINATION BULLET RECESSED DOWNLIGHT LIGHT MOUNTED @ 14'; 5811-ISA-T-20L-8040-W-DM-1-BB     |
| ⊙      | 2   | CANOPY      | 1670   | 0.90 | ILLUMINATION BULLET RECESSED DOWNLIGHT LIGHT MOUNTED @ 14'; 5811-ISA-T-20L-8040-W-DM-1-BB-EM  |

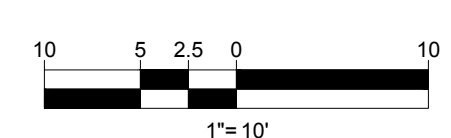


**AREA LIGHT DETAIL**

NOTE: THIS DETAIL IS FOR BID AND BUDGETARY PURPOSES ONLY. CONTRACTOR SHALL BE RESPONSIBLE FOR HAVING A FOUNDATION DESIGN PREPARED BY A QUALIFIED STRUCTURAL ENGINEER CONSIDERING LIGHTING MANUFACTURER REQUIREMENTS, LOCAL WIND LOADS AND SITE SPECIFIC SOIL PARAMETERS.

- SOME SITE CONDITIONS AND/OR LOCATIONS MAY REQUIRE VIBRATION DAMPENING MEASURES AS DETERMINED BY A STRUCTURAL ENGINEER.
- THE STRUCTURAL ENGINEER SHALL BE NOTIFIED OF THE INTENT TO MOUNT ANYTHING TO THE POLE, ASIDE FROM THE LIGHT FIXTURES, INCLUDING BUT NOT LIMITED TO CAMERAS, BANNERS, FLAGS, SIGNAGE, ETC. AS IT WILL IMPACT THE POLE AND FOUNDATION DESIGN.

**THIS PLAN TO BE UTILIZED FOR LIGHTING PURPOSES ONLY**



**BOHLER**  
SITE CIVIL AND CONSULTING ENGINEERING  
PROGRAM MANAGEMENT  
LANDSCAPE ARCHITECTURE  
SUSTAINABLE DESIGN  
PERMITTING SERVICES  
TRANSPORTATION SERVICES

**REVISIONS**

| REV | DATE       | COMMENT           | DRAWN BY |
|-----|------------|-------------------|----------|
| 1   | 04/03/2023 | PER TOWN COMMENTS | JJ<br>JF |

**811**  
Know what's below.  
Call before you dig.  
ALWAYS CALL 811  
It's fast. It's free. It's the law.

**PERMIT SET**

THIS DRAWING IS INTENDED FOR MUNICIPAL AND/OR AGENCY REVIEW AND APPROVAL. IT IS NOT INTENDED AS A CONSTRUCTION DOCUMENT UNLESS INDICATED OTHERWISE.

PROJECT No.: MAA220275.00  
DRAWN BY: CFDR/JRM  
CHECKED BY: JF/RMM  
DATE: 04/03/2023  
CAD ID.: MAA220275.00-SPPD-08

**PROPOSED SITE PLAN DOCUMENTS**

FOR

**CHASE**

PROPOSED BANK DEVELOPMENT  
MAP: 17 LOT: 63  
431 MAIN STREET,  
TOWN OF READING,  
MIDDLESEX COUNTY,  
MASSACHUSETTS

**BOHLER**

352 TURNPIKE ROAD  
SOUTHBOROUGH, MA 01772  
Phone: (508) 480-9900  
www.BohlerEngineering.com

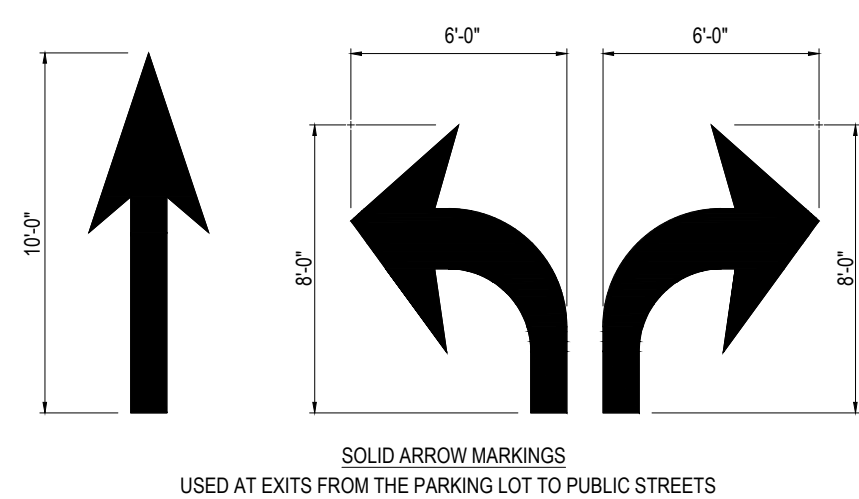
SHEET TITLE:  
**LIGHTING PLAN**

SHEET NUMBER:  
**C-703**

REVISION 1 - 04/03/2023

P:\2022\MAA220275\01\CADD\DRAWINGS\PLAN SET\CIVIL\SITE PLANS\MAA220275.00-SPPD-08.dwg - LAYOUT: C-703-LIGHT

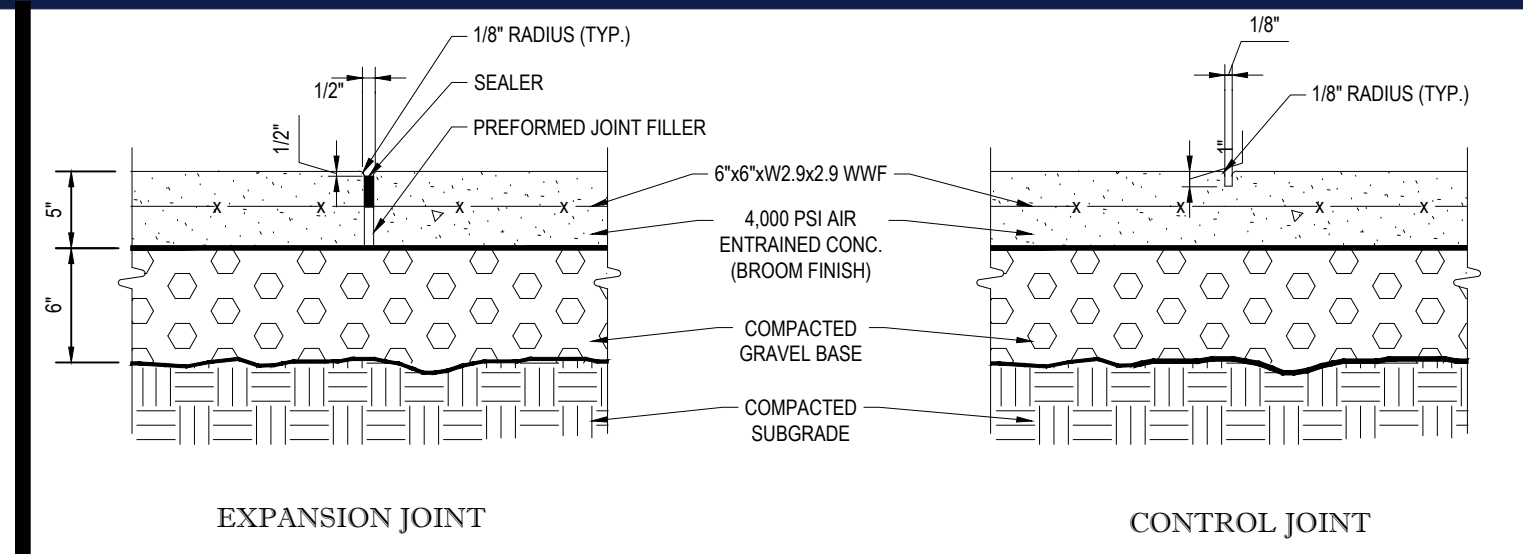




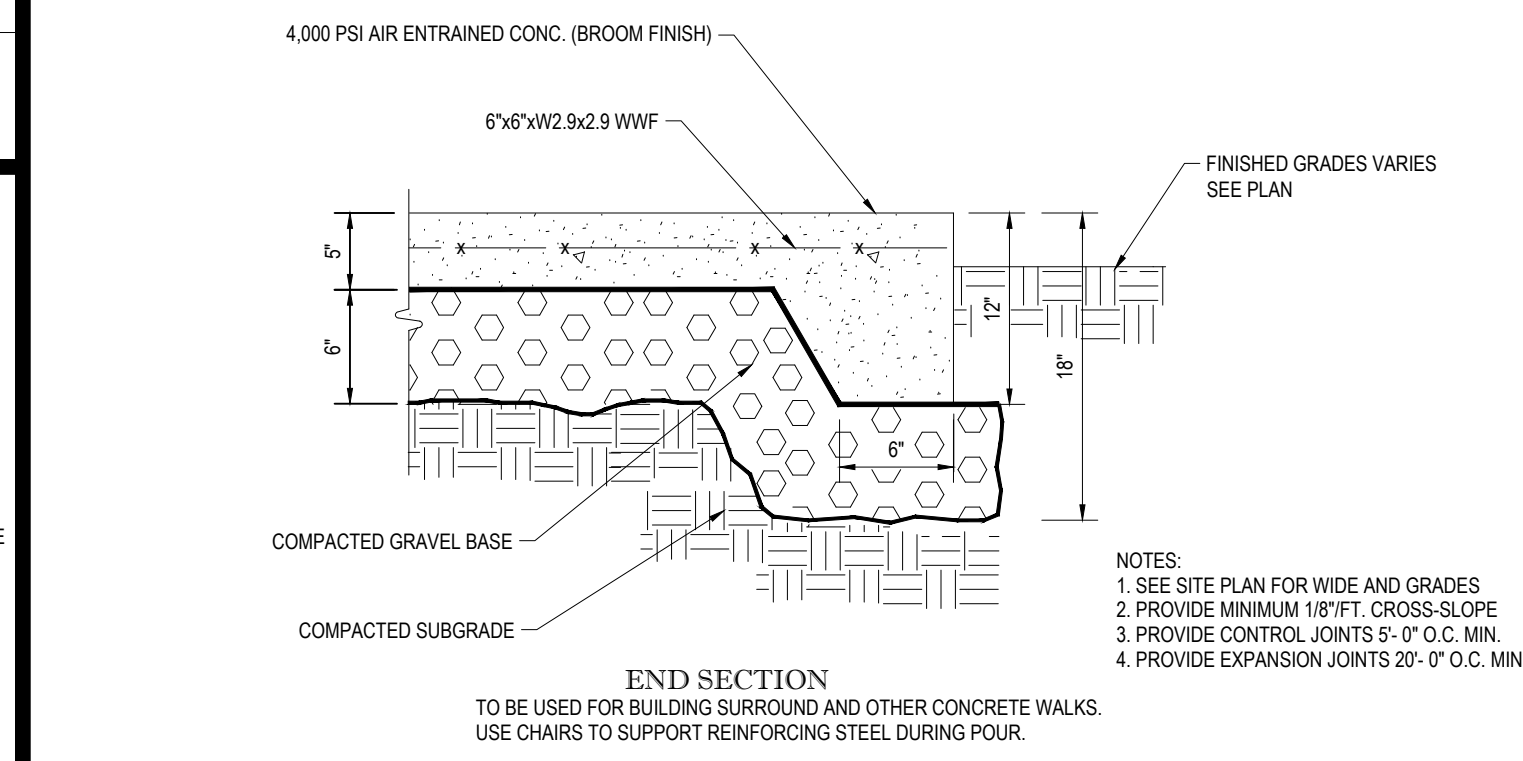
- NOTES:
- WORDS AND ARROWS SHALL BE APPLIED IN ACCORDANCE WITH SECTION 38.20 OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS.
  - THESE WORDS AND ARROWS ARE TO BE PAINTED RETROREFLECTIVE WHITE.

**PAINTED TRAFFIC ARROWS**

N.T.S.

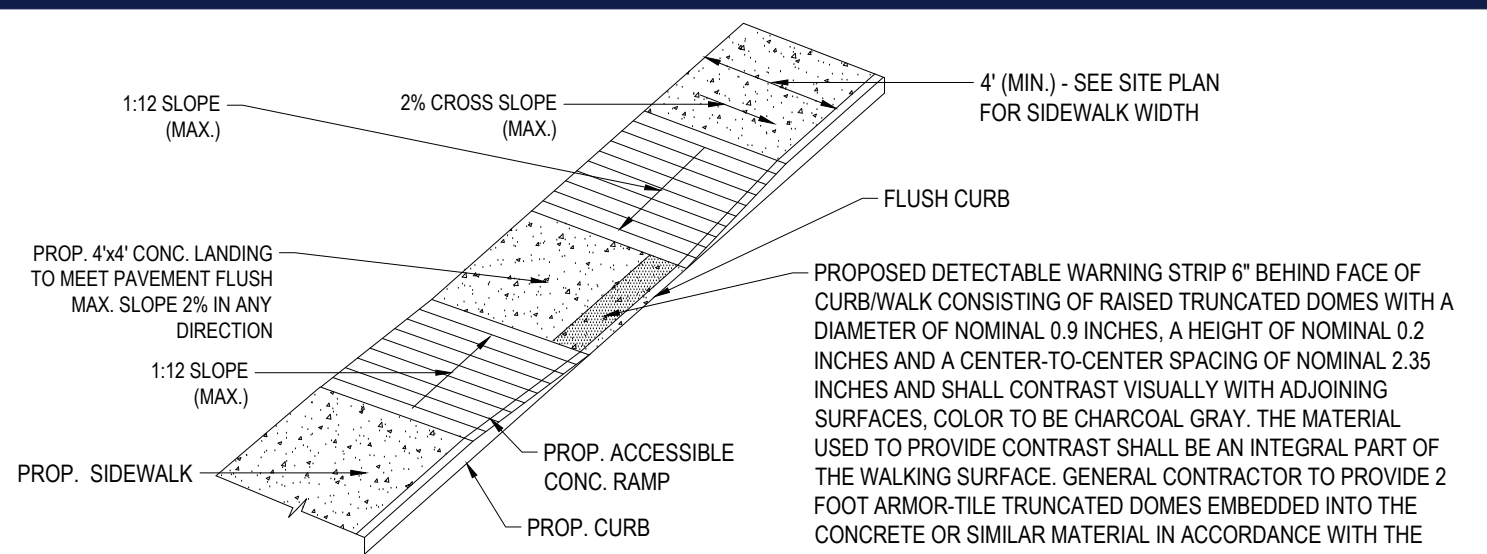


**EXPANSION JOINT CONTROL JOINT**



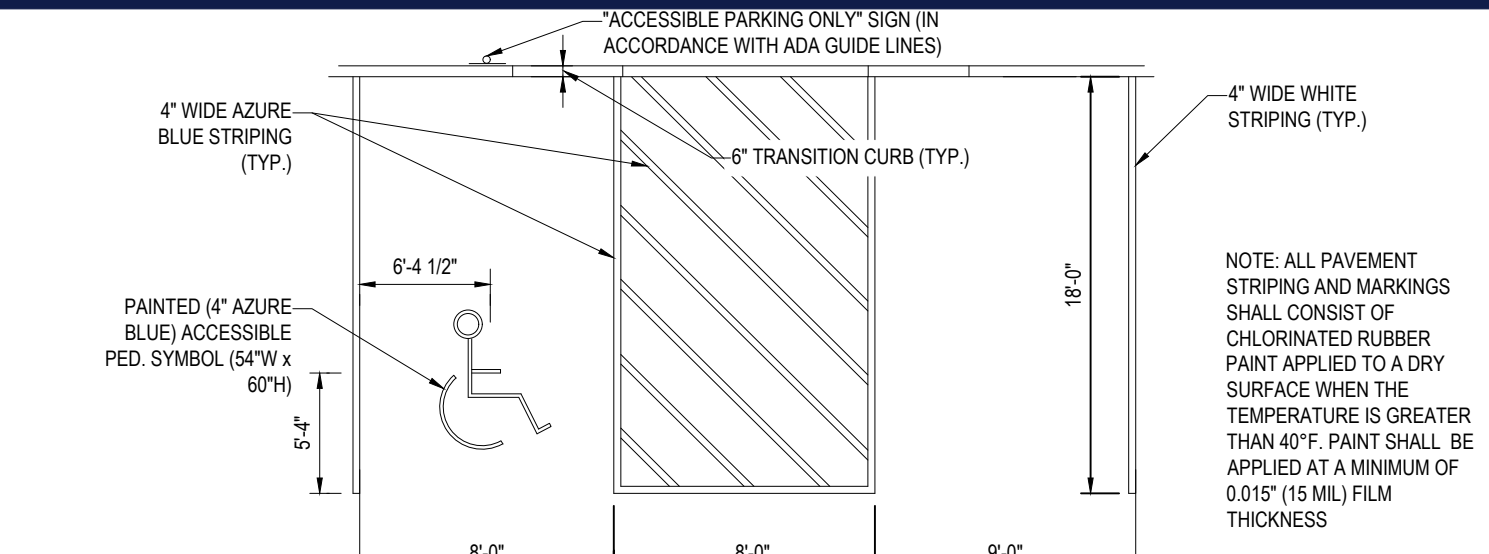
**MONOLITHIC CONC. SIDEWALK DETAILS**

N.T.S.



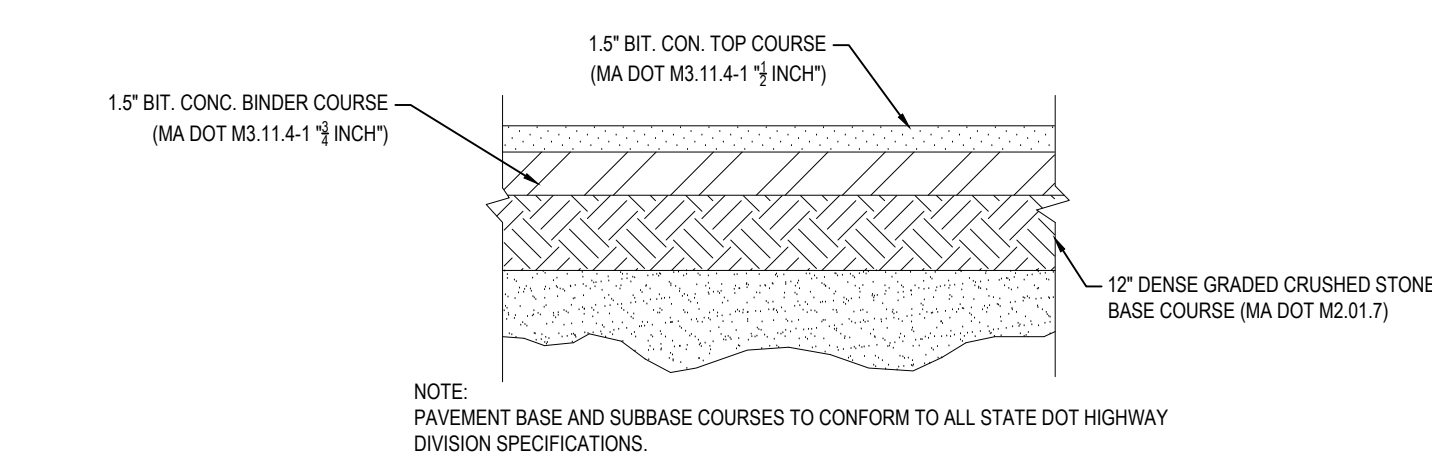
**ACCESSIBLE RAMP**

N.T.S.



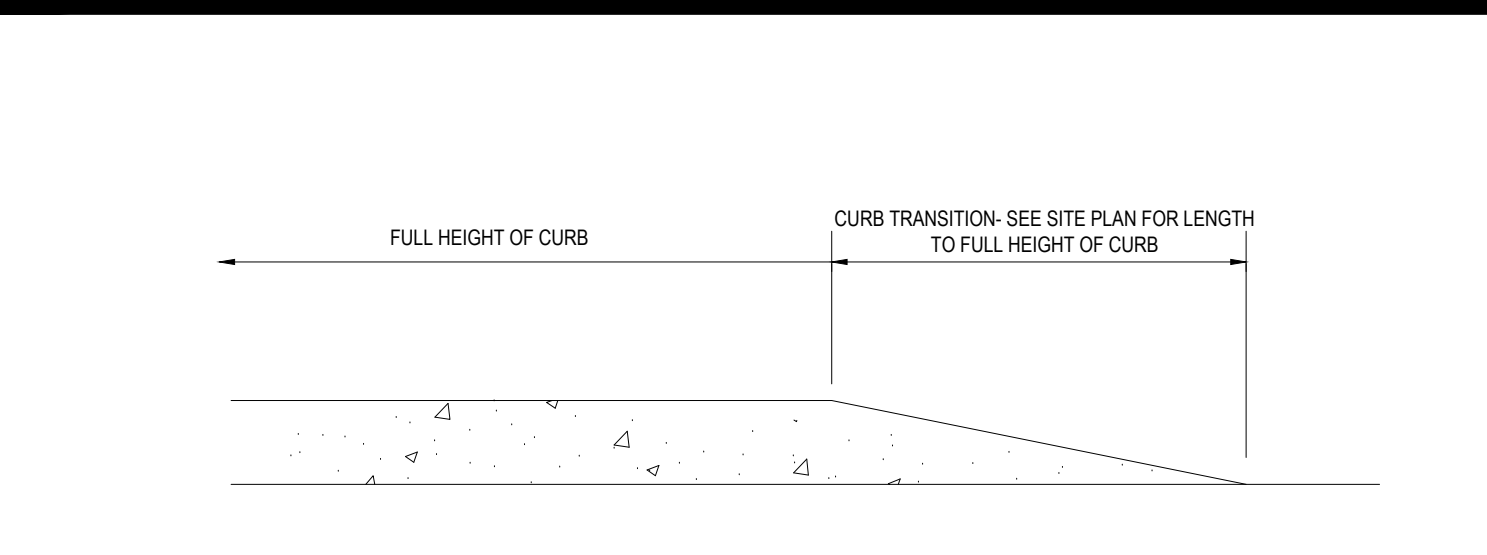
**ACCESSIBLE STALL MARKINGS & PARKING LOT STRIPING DETAIL**

N.T.S.



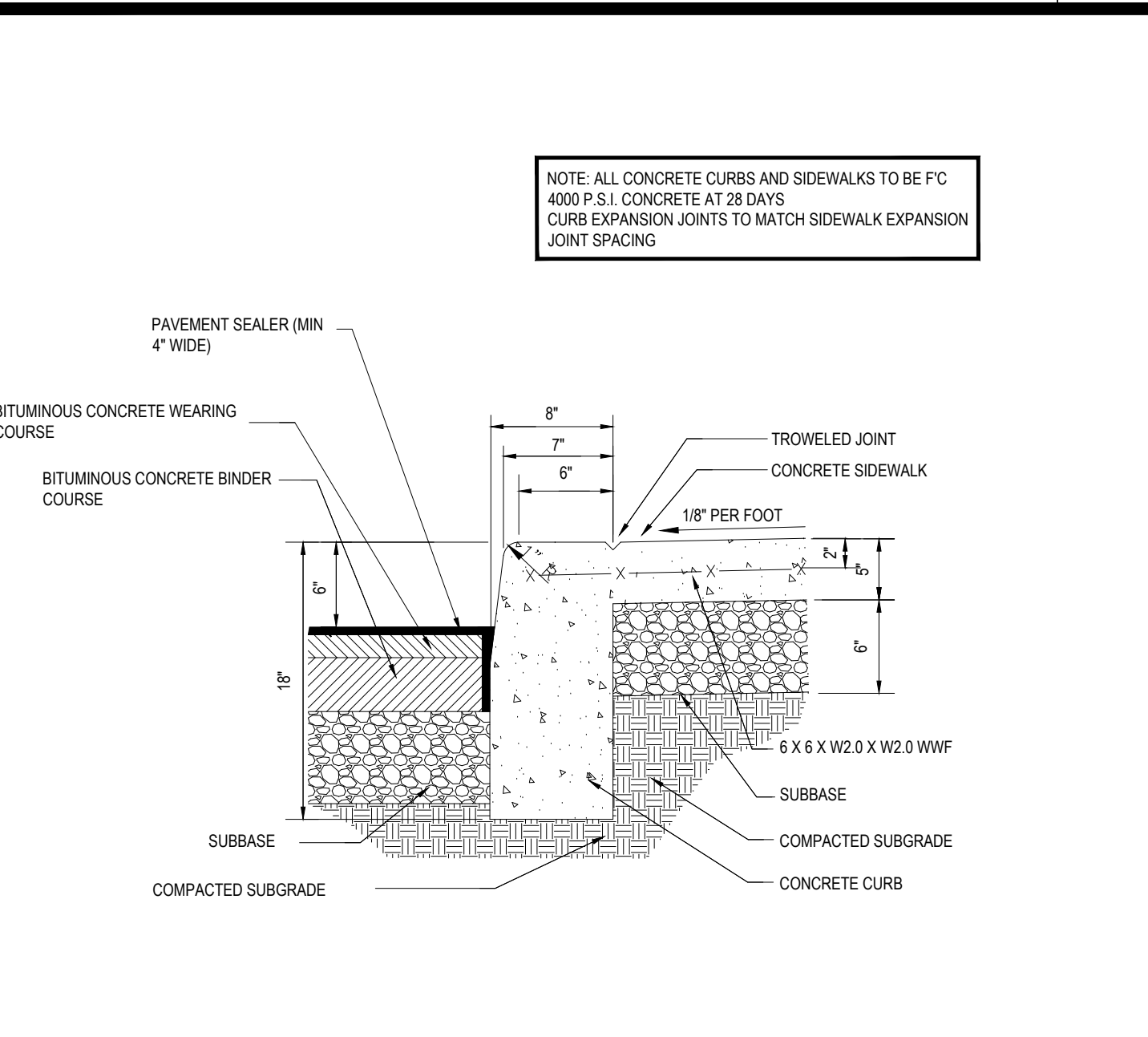
**TYPICAL PAVEMENT SECTION**

N.T.S.



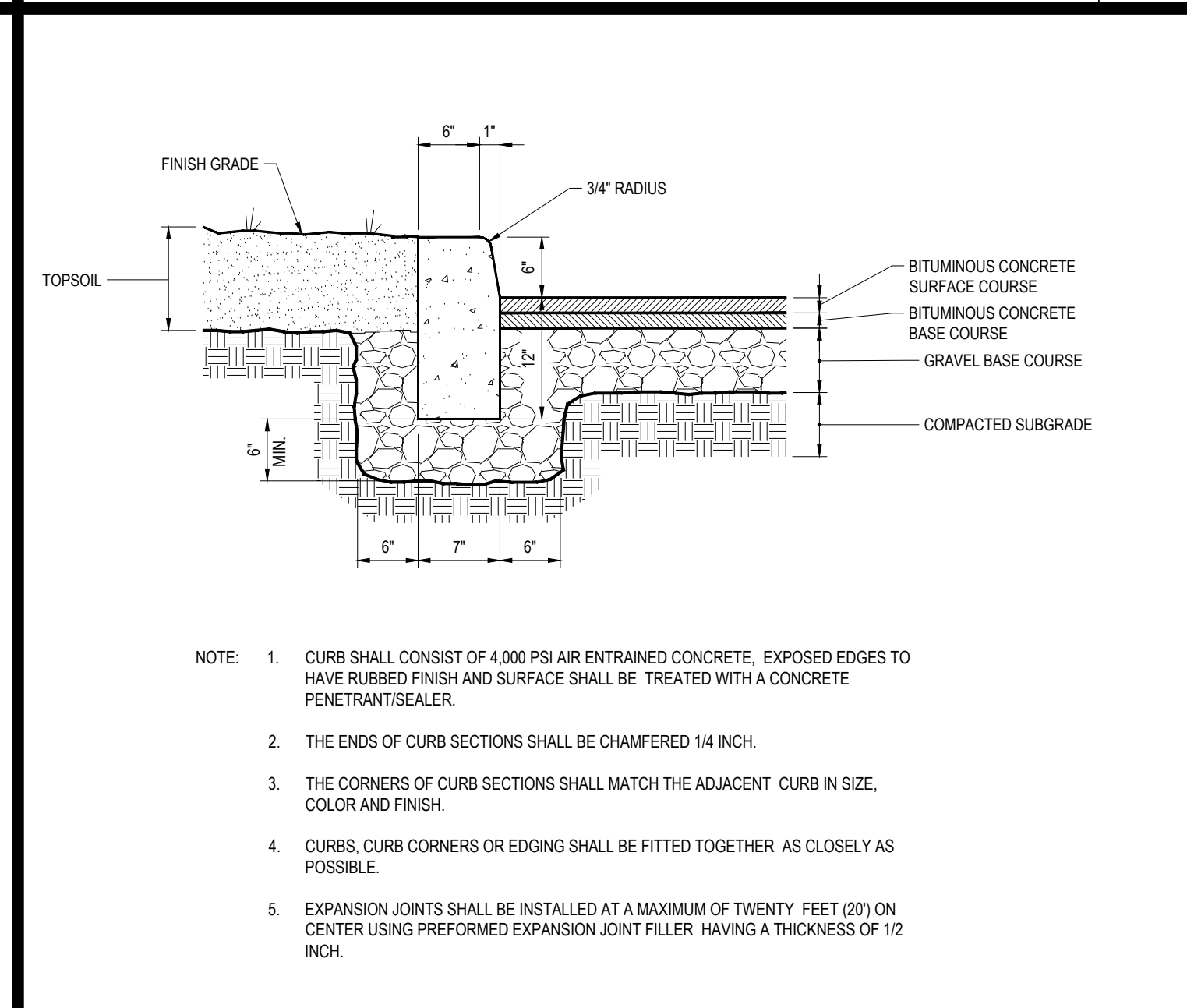
**TRANSITION CURB DETAIL**

N.T.S.



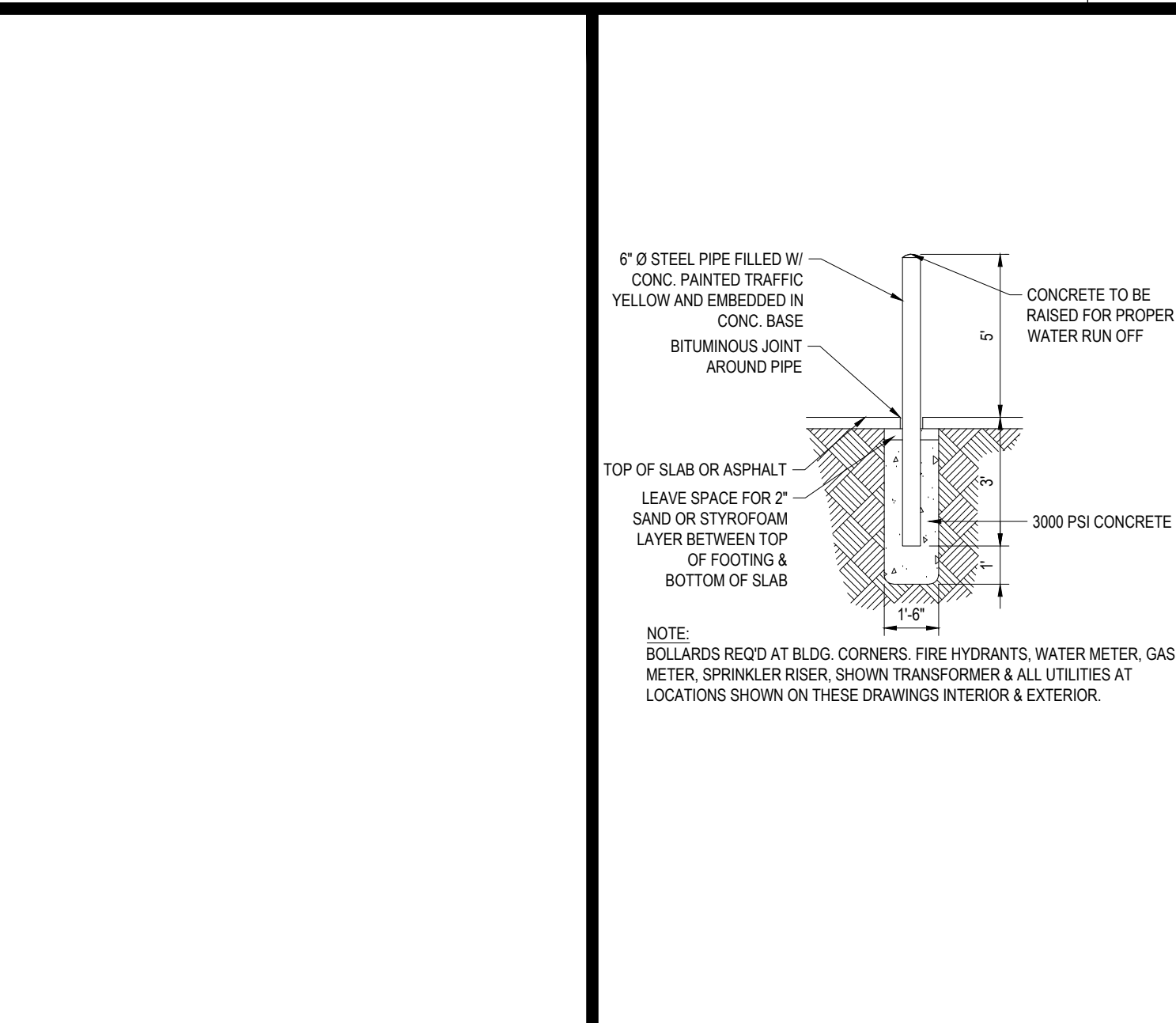
**CURB DETAIL W/ MONOLITHIC SIDEWALK ON-SITE**

N.T.S.



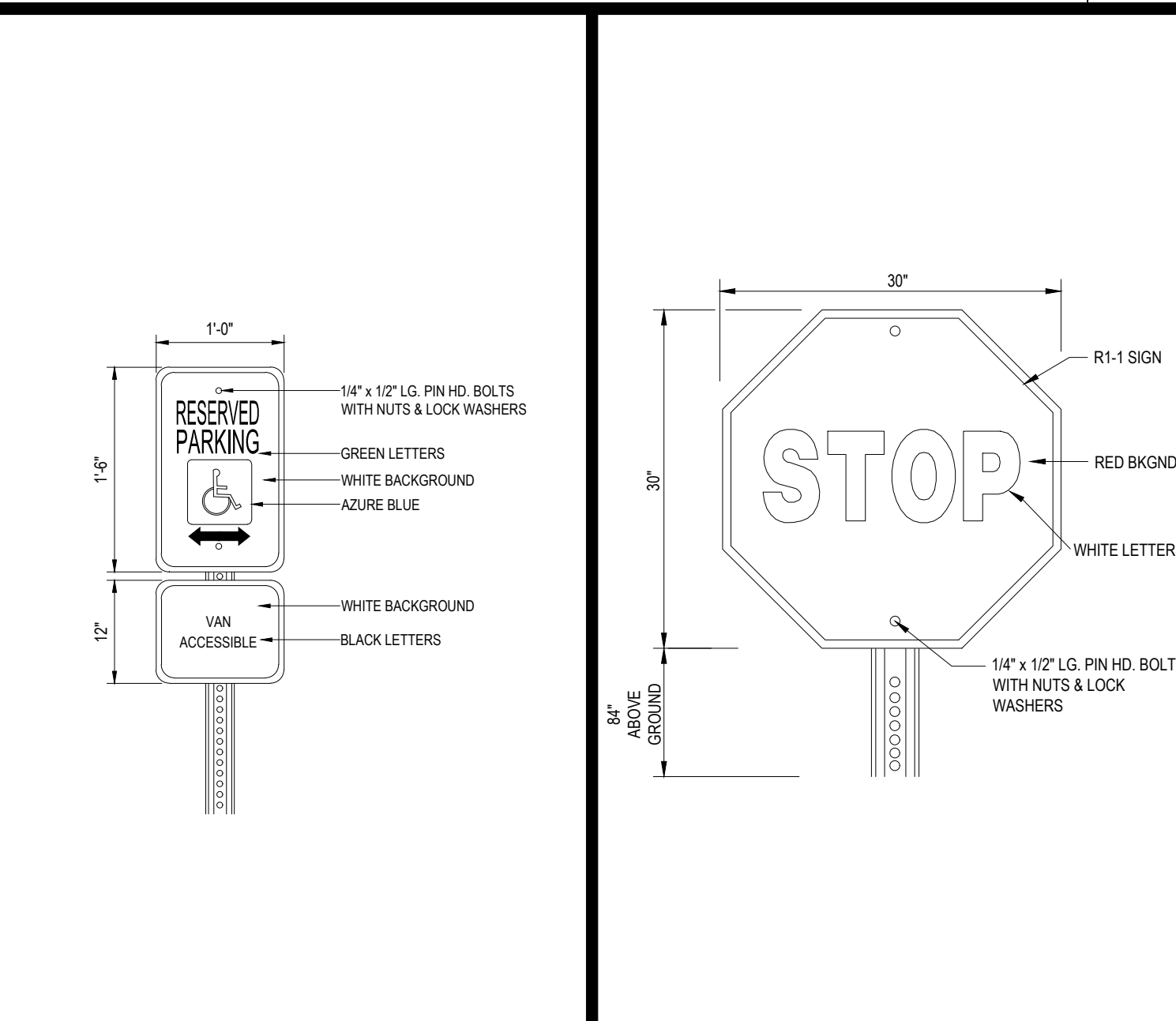
**PRECAST CONCRETE CURB DETAIL**

N.T.S.



**BOLLARD**

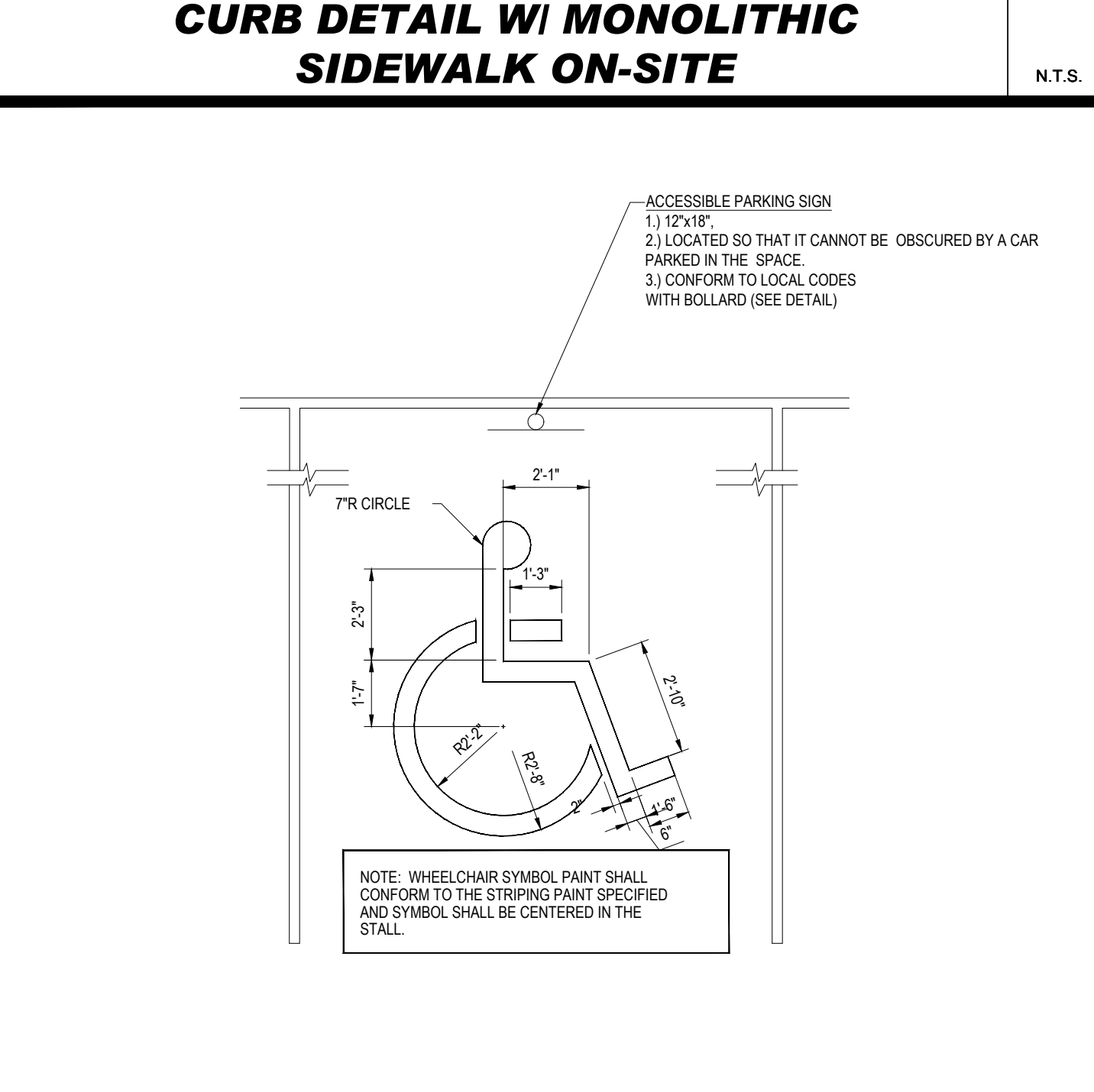
N.T.S.



**ACCESSIBLE PARKING SIGN**

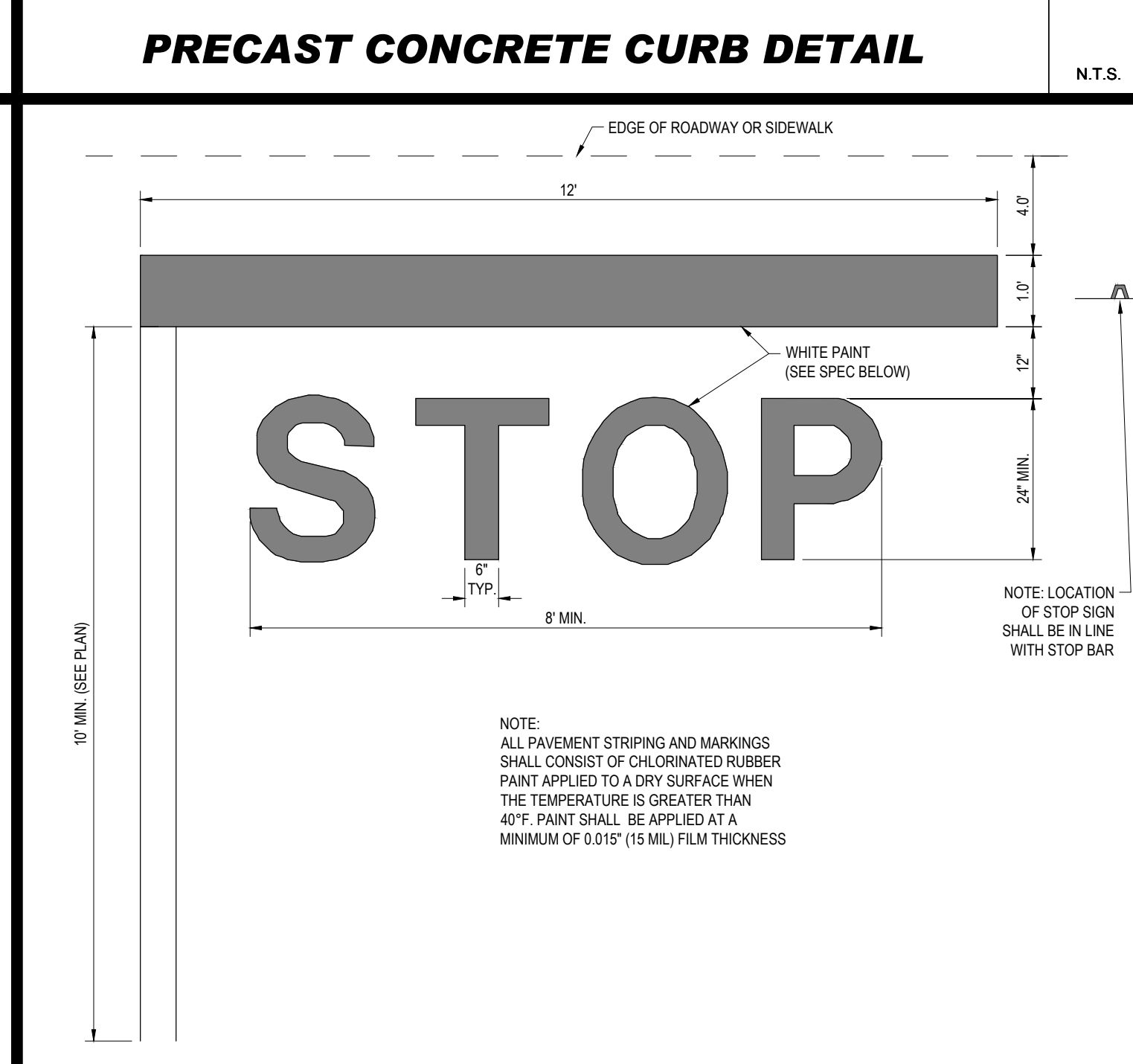
**'STOP' SIGN DETAIL**

N.T.S.



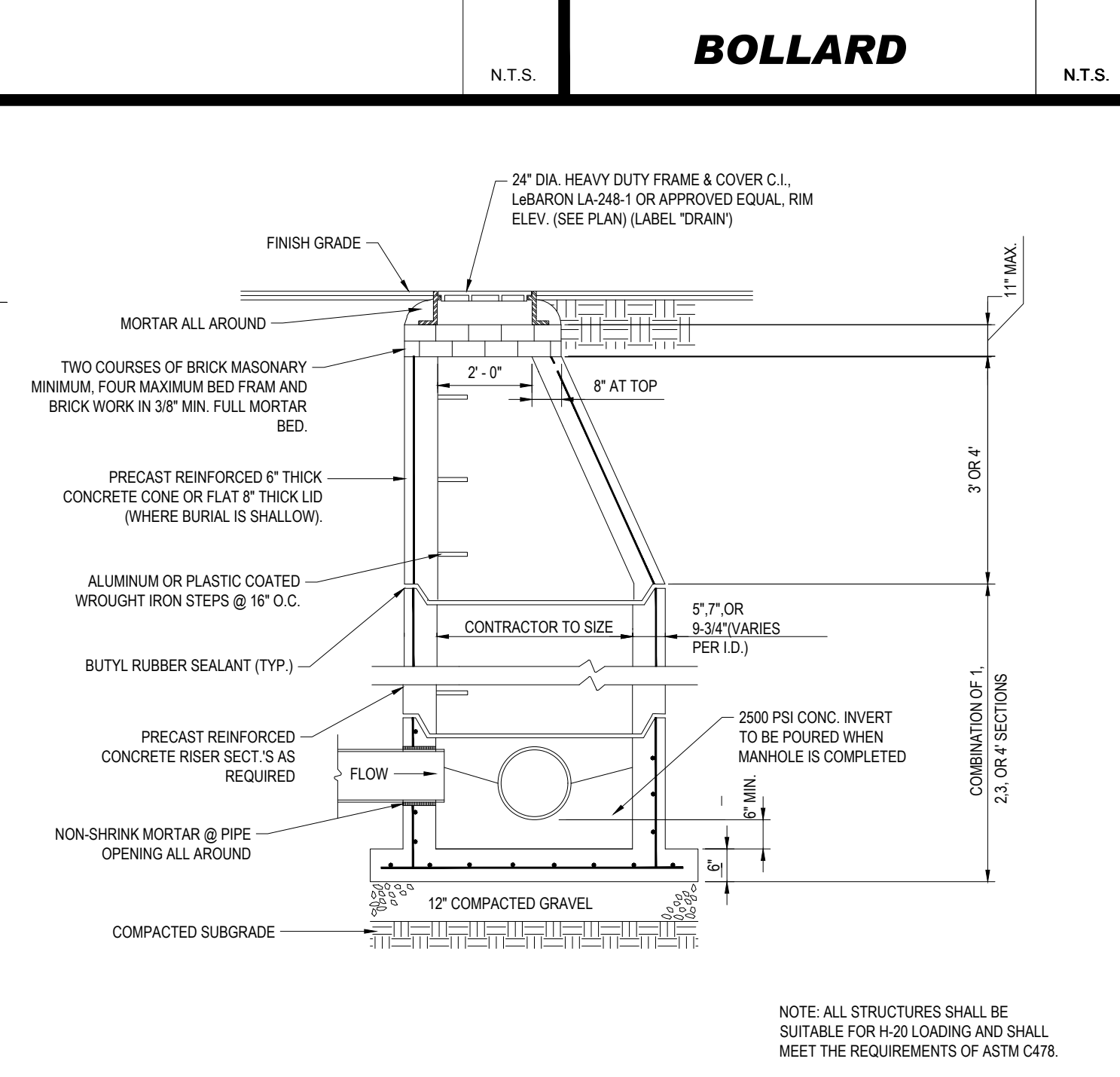
**ACCESSIBLE PARKING STALL PAINTING DETAIL**

N.T.S.



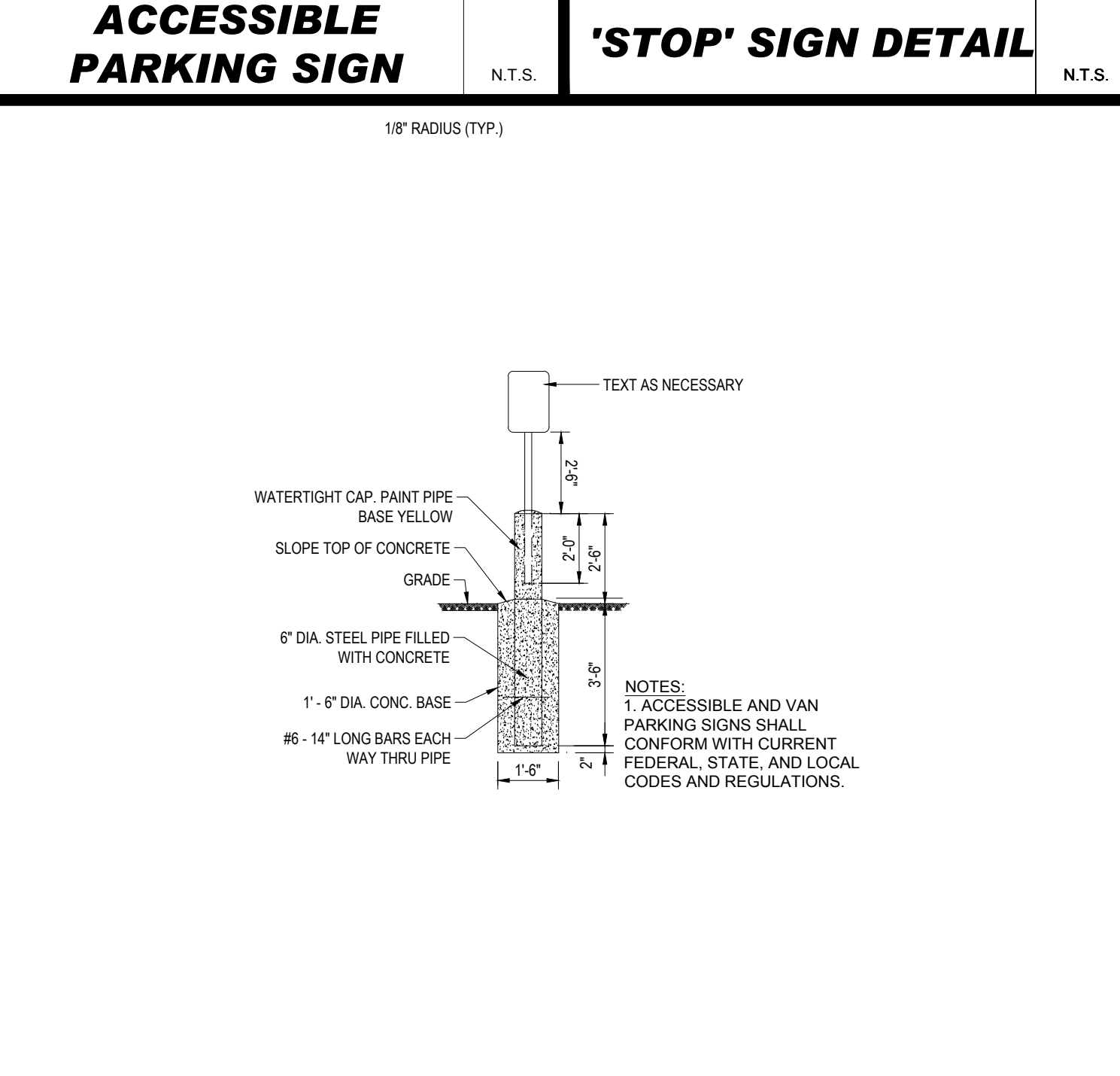
**'STOP' BAR DETAIL**

N.T.S.



**PRECAST CONCRETE STORM DRAIN MANHOLE**

N.T.S.



**SIGN BOLLARD**

N.T.S.

**BOHLER**  
 SITE CIVIL AND CONSULTING ENGINEERING  
 PROGRAM MANAGEMENT  
 LANDSCAPE ARCHITECTURE  
 SUSTAINABLE DESIGN  
 PERMITTING SERVICES  
 TRANSPORTATION SERVICES

**REVISIONS**

| REV | DATE       | COMMENT           | DRAWN BY | CHECKED BY |
|-----|------------|-------------------|----------|------------|
| 1   | 04/03/2023 | PER TOWN COMMENTS | JJ       | JF         |

**811**  
 Know what's below.  
 Call before you dig.  
 ALWAYS CALL 811  
 It's fast. It's free. It's the law.

**PERMIT SET**

PROJECT No.: MAA220275.00  
 DRAWN BY: CFDR/JR  
 DATE: 04/03/2023  
 CAD LID: MAA220275.00-SPPD-08

**PROPOSED SITE PLAN DOCUMENTS**

FOR  
**CHASE**

PROPOSED BANK DEVELOPMENT  
 MAP: 17 LOT: 63  
 431 MAIN STREET,  
 TOWN OF READING,  
 MIDDLESEX COUNTY,  
 MASSACHUSETTS

**BOHLER**  
 352 TURNPIKE ROAD  
 SOUTHBOROUGH, MA 01772  
 Phone: (508) 480-9900  
 www.BohlerEngineering.com

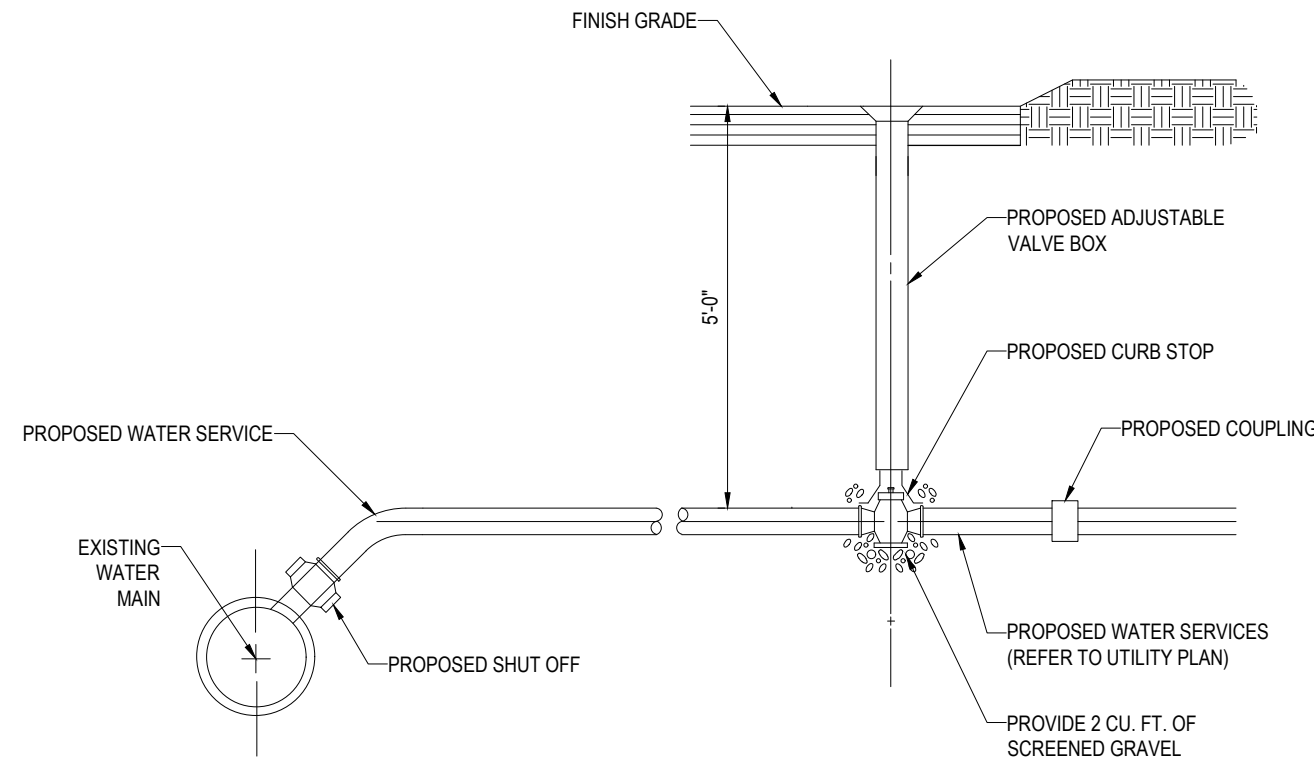
SHEET TITLE:  
**DETAIL SHEET**

SHEET NUMBER:  
**C-901**

REVISION 1 - 04/03/2023

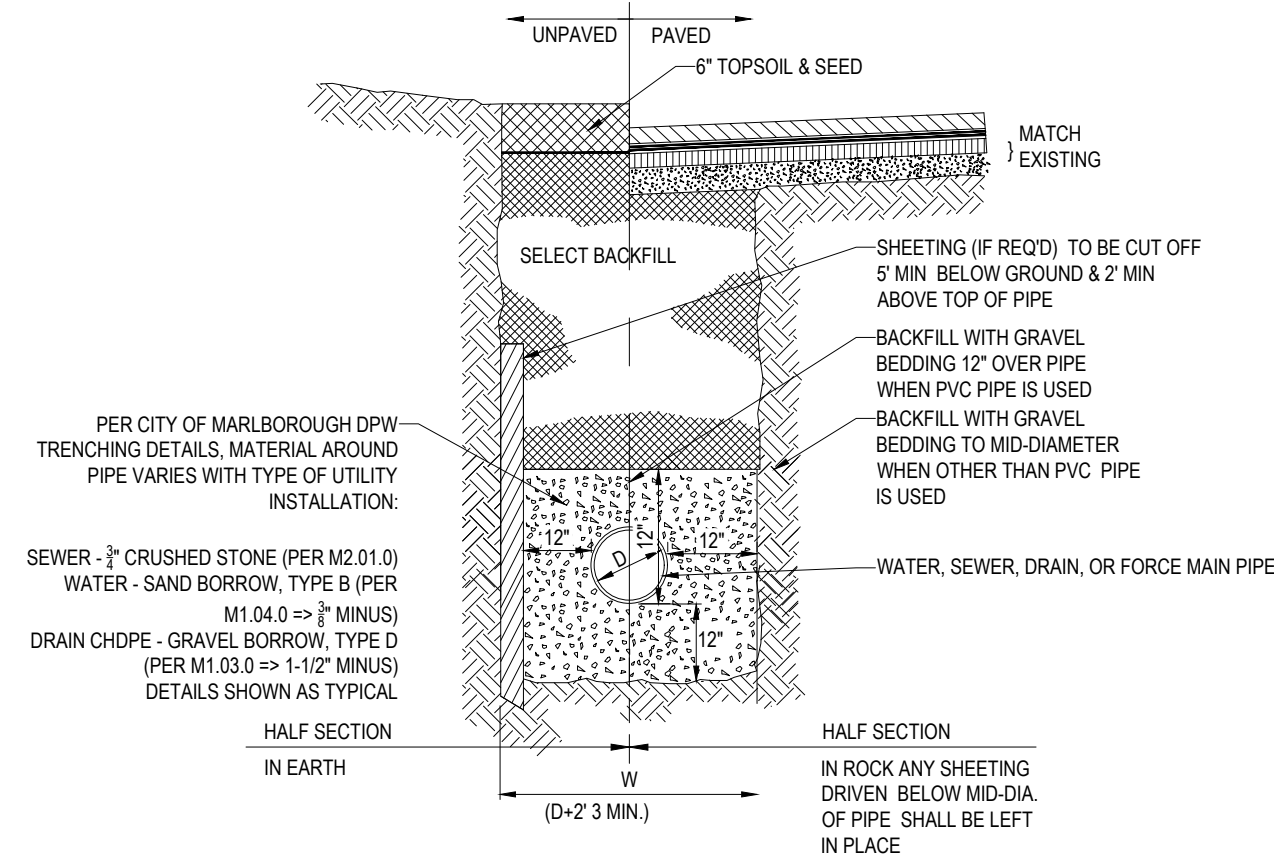
P:\2022\MAA220275.00\CADD\DRAWINGS\PLAN SET\CIVIL\SITE PLANS\MAA220275.00-SPPD-08.dwg - LAYOUT: C-901-DTL





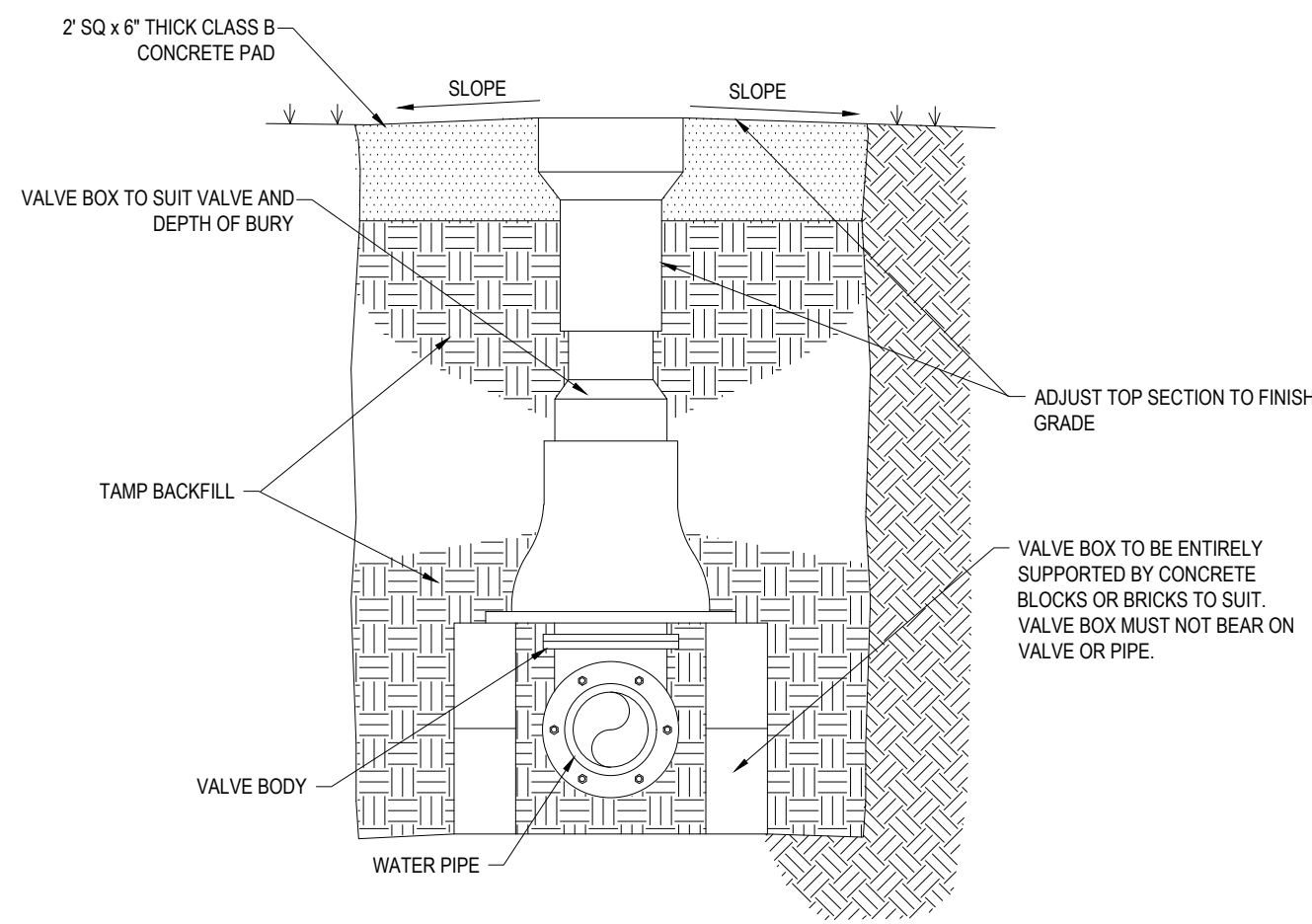
**SERVICE CONNECTION DETAIL**

N.T.S.



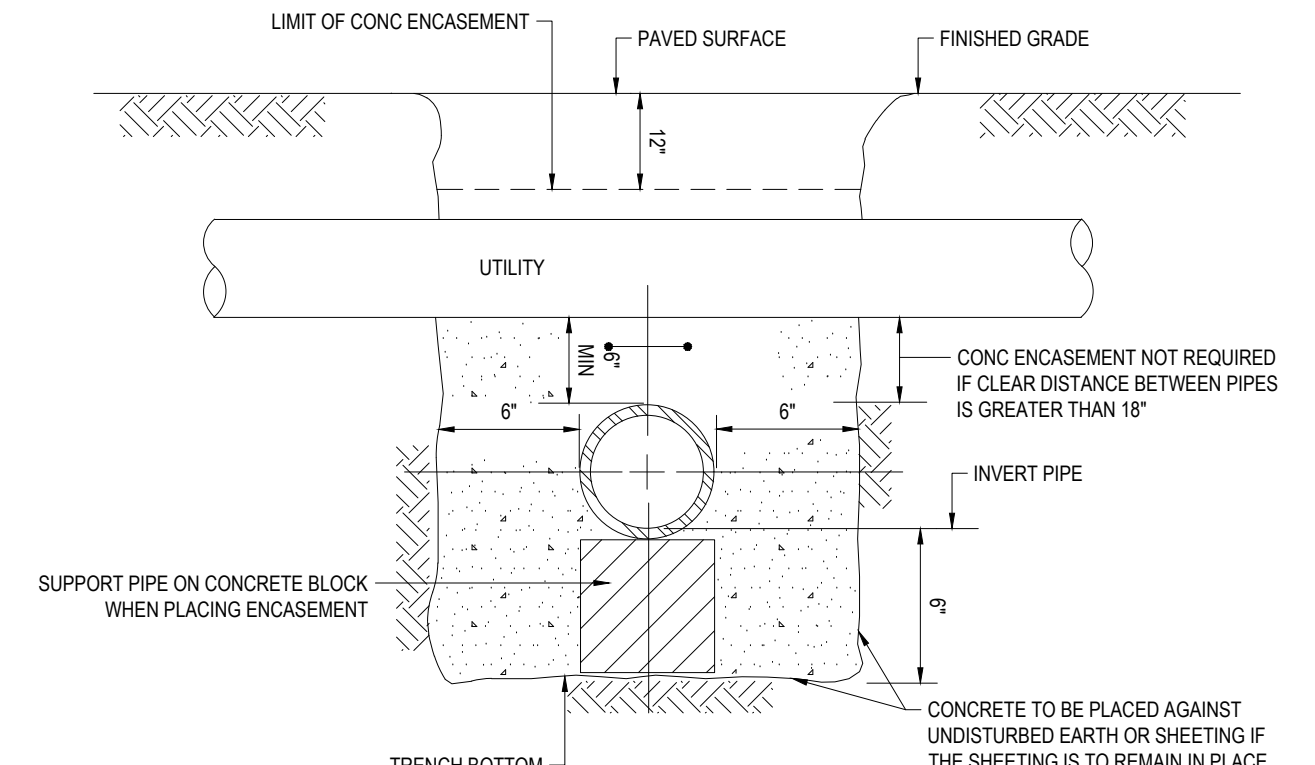
**TYPICAL UTILITY TRENCH**

N.T.S.



**GATE VALVE DETAIL**

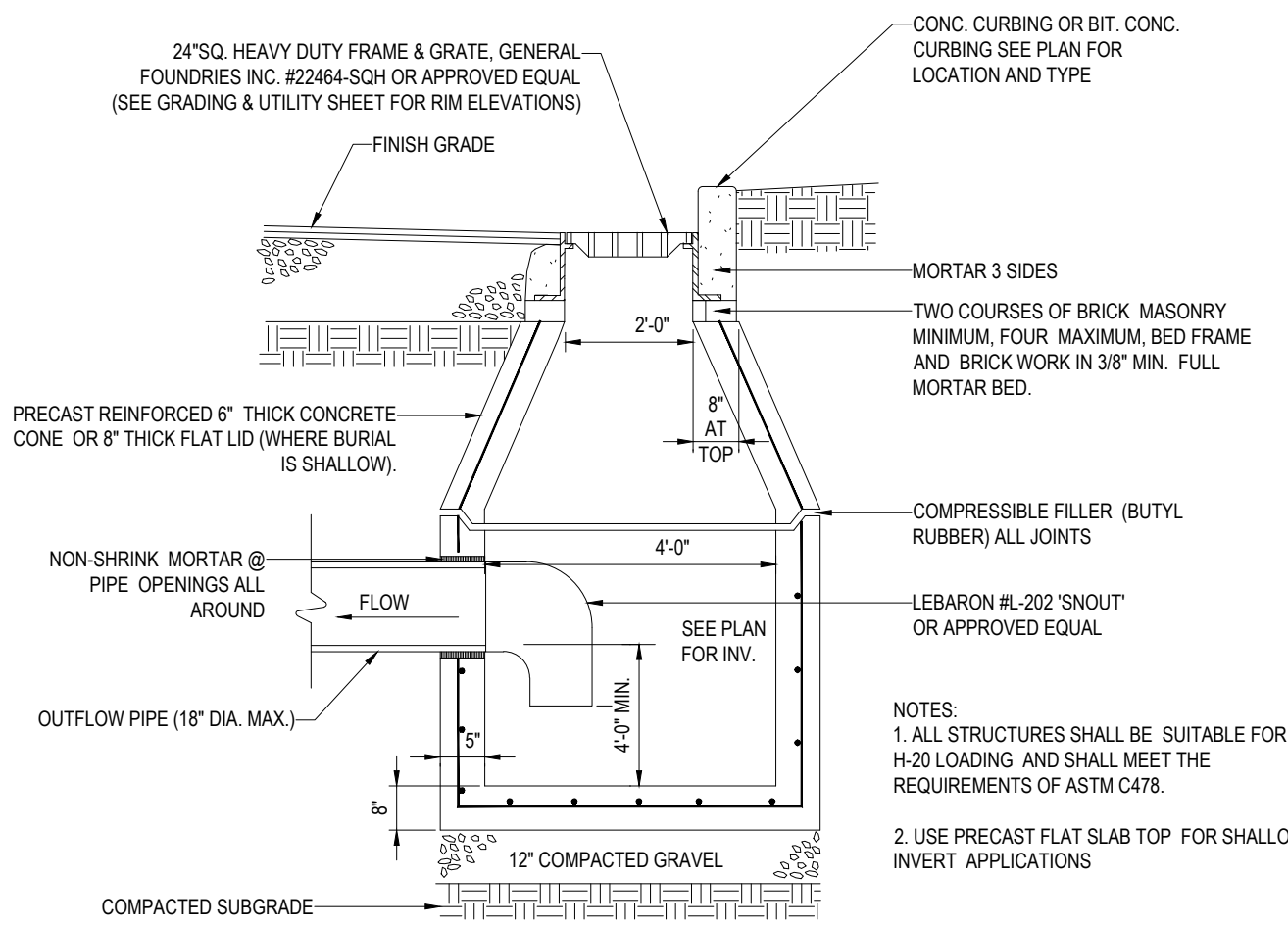
N.T.S.



**CONCRETE ENCASEMENT AT UTILITY CROSSING**

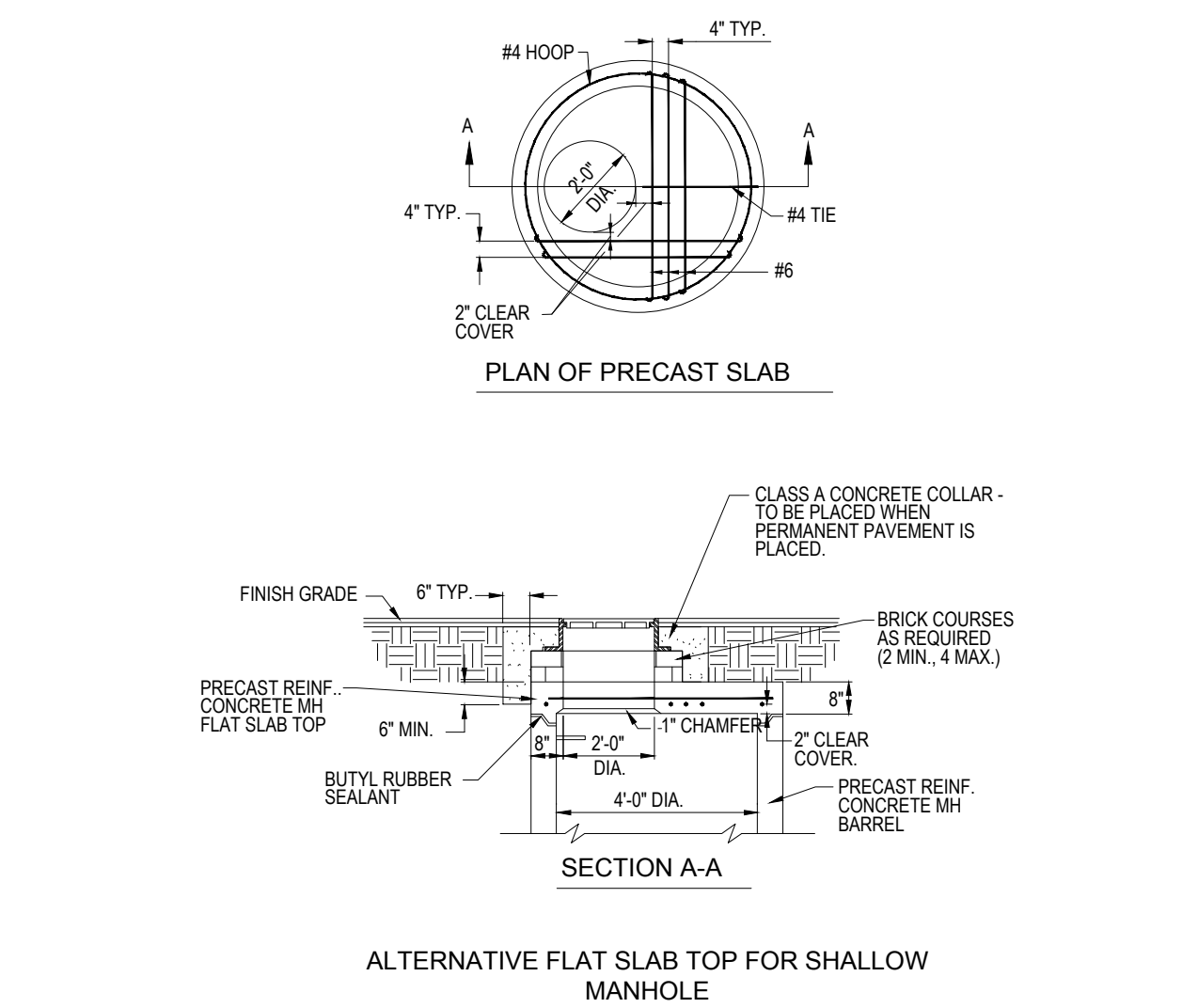
N.T.S.

- NOTES:
1. PIPE MUST BE BRACED VERTICALLY & HORIZONTALLY TO PREVENT FLOATATION DURING PLACEMENT OF CONCRETE
  2. ALL CONCRETE ENCASEMENT SHALL BE KEPT 12" BELOW THE BOTTOM OF ASPHALT PAVEMENT
  3. PAVEMENT SECTION TAKEN FROM PLAN ENTITLED "SITE DETAILS" THE BOTTOM OF ASPHALT PAVEMENT



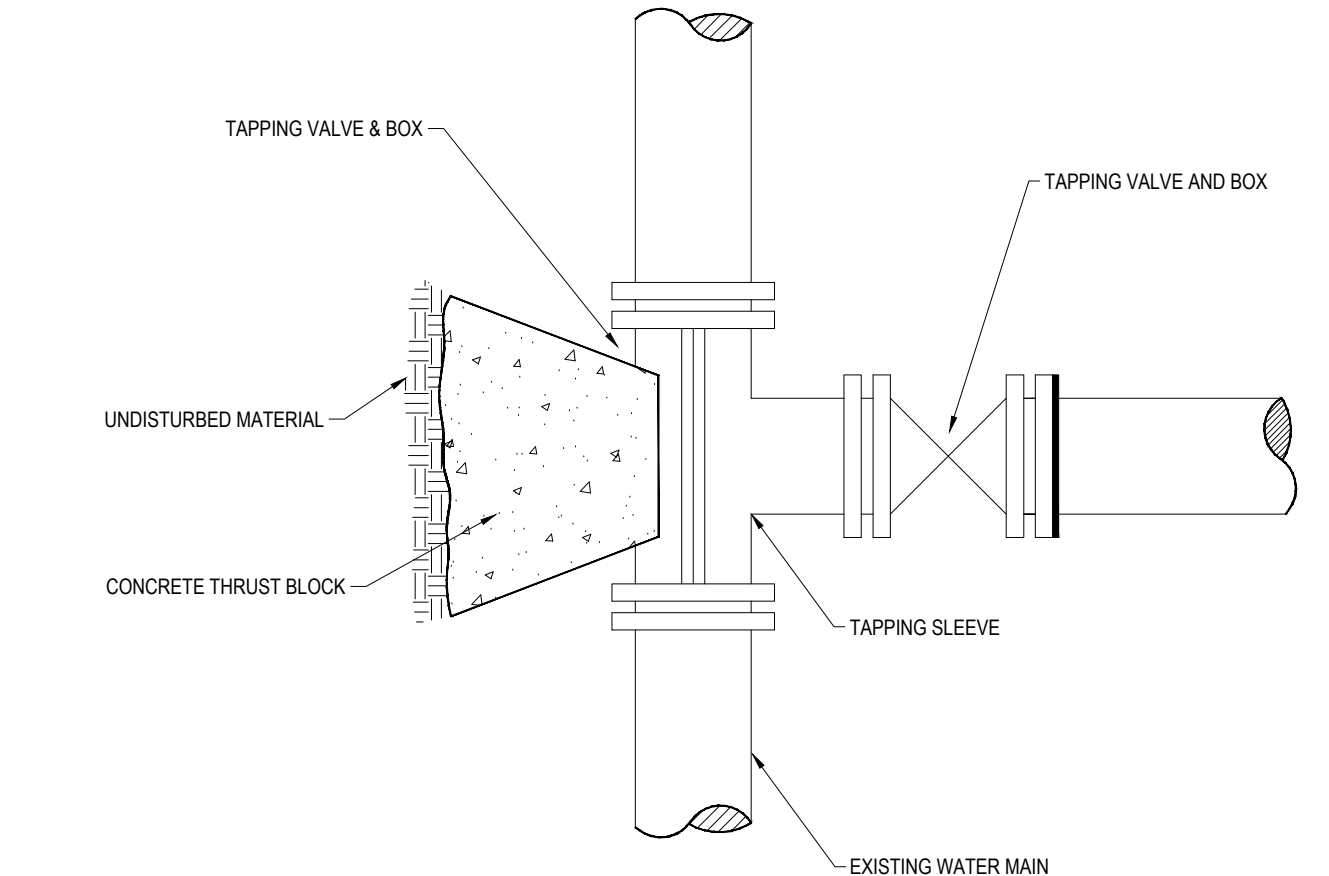
**PRECAST CONCRETE DEEP SUMP CATCH BASIN DETAIL**

N.T.S.



**ALTERNATIVE FLAT SLAB TOP FOR SHALLOW MANHOLE**

N.T.S.



**TAPPING SLEEVE AND GATE VALVE**

N.T.S.

**BOHLER**  
 SITE CIVIL AND CONSULTING ENGINEERING  
 PROGRAM MANAGEMENT  
 LANDSCAPE ARCHITECTURE  
 SUSTAINABLE DESIGN  
 PERMITTING SERVICES  
 TRANSPORTATION SERVICES

**REVISIONS**

| REV | DATE       | COMMENT           | CHECKED BY |
|-----|------------|-------------------|------------|
| 1   | 04/03/2023 | PER TOWN COMMENTS | JJ<br>JF   |

**811**  
 Know what's below.  
 Call before you dig.  
 ALWAYS CALL 811  
 It's fast. It's free. It's the law.

**PERMIT SET**

PROJECT No.: MAA220275.00  
 DRAWN BY: CFDR/JR  
 CHECKED BY: JF/RMM  
 DATE: 04/03/2023  
 CAD ID: MAA220275.00-SPPD-08

**PROPOSED SITE PLAN DOCUMENTS**



PROPOSED BANK DEVELOPMENT  
 MAP: 17 LOT: 63  
 431 MAIN STREET,  
 TOWN OF READING,  
 MIDDLESEX COUNTY,  
 MASSACHUSETTS

**BOHLER**  
 352 TURNPIKE ROAD  
 SOUTHBOROUGH, MA 01772  
 Phone: (508) 480-9900  
 www.BohlerEngineering.com

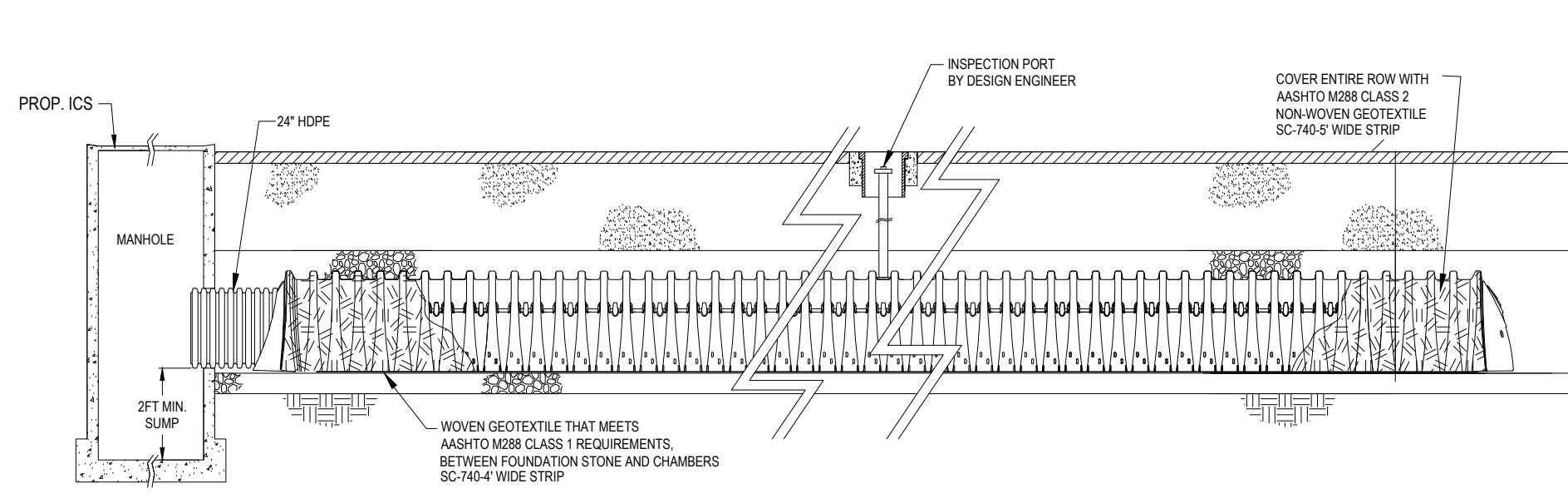
**DETAIL SHEET**

**C-902**

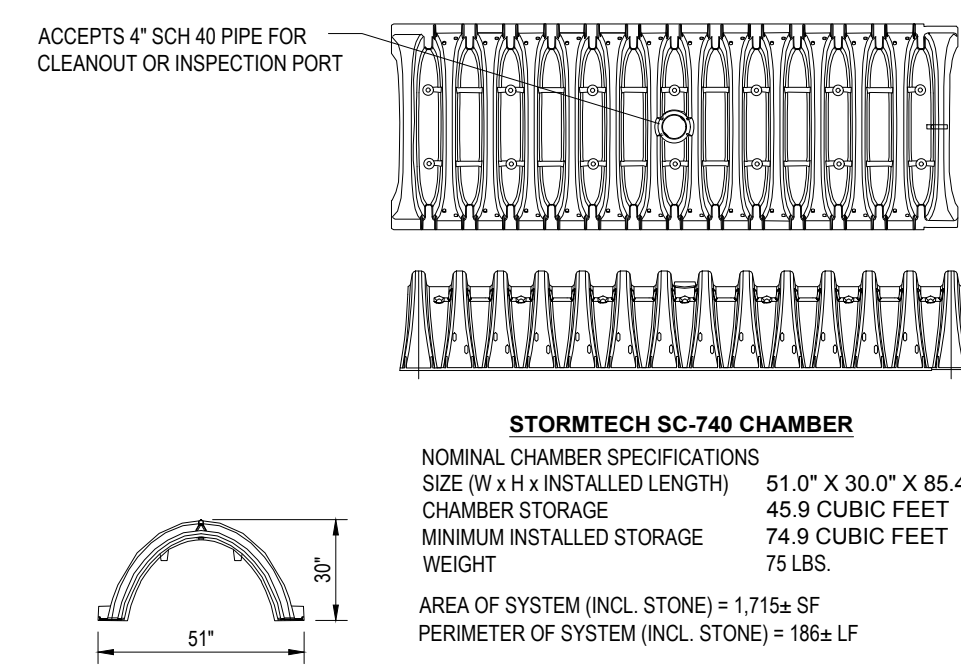
REVISION 1 - 04/03/2023

P:\2022\MAA220275.00\CADD\DRAWINGS\PLAN SET\CIVIL SITE PLANS\MAA220275.00-SPPD-08.dwg - LAYOUT: C-902.DETL

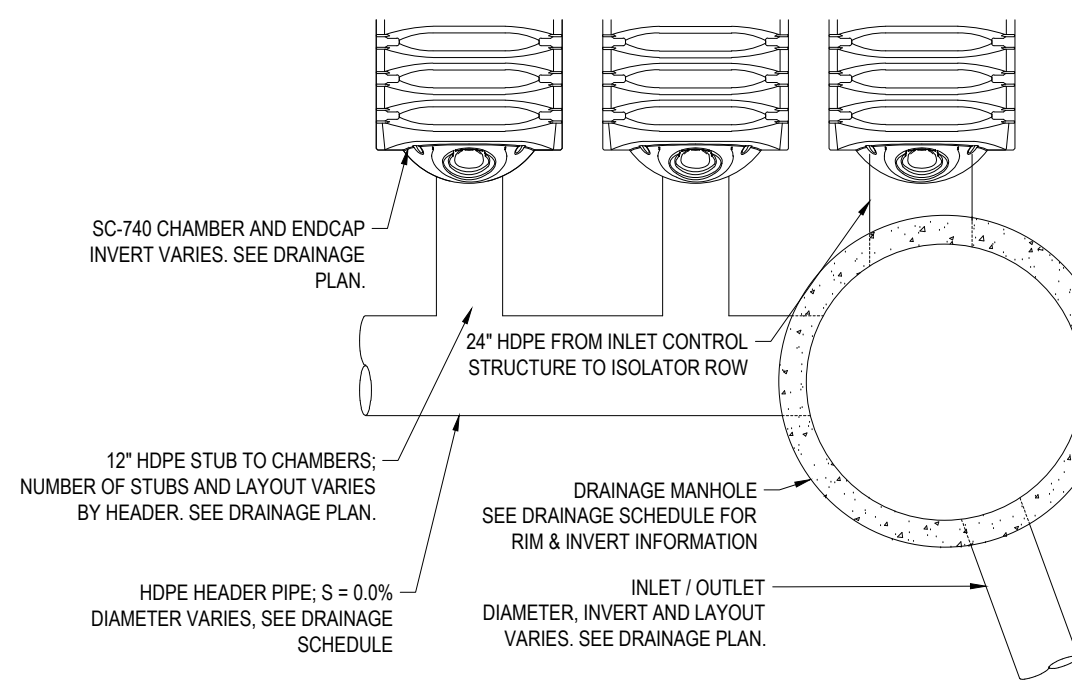




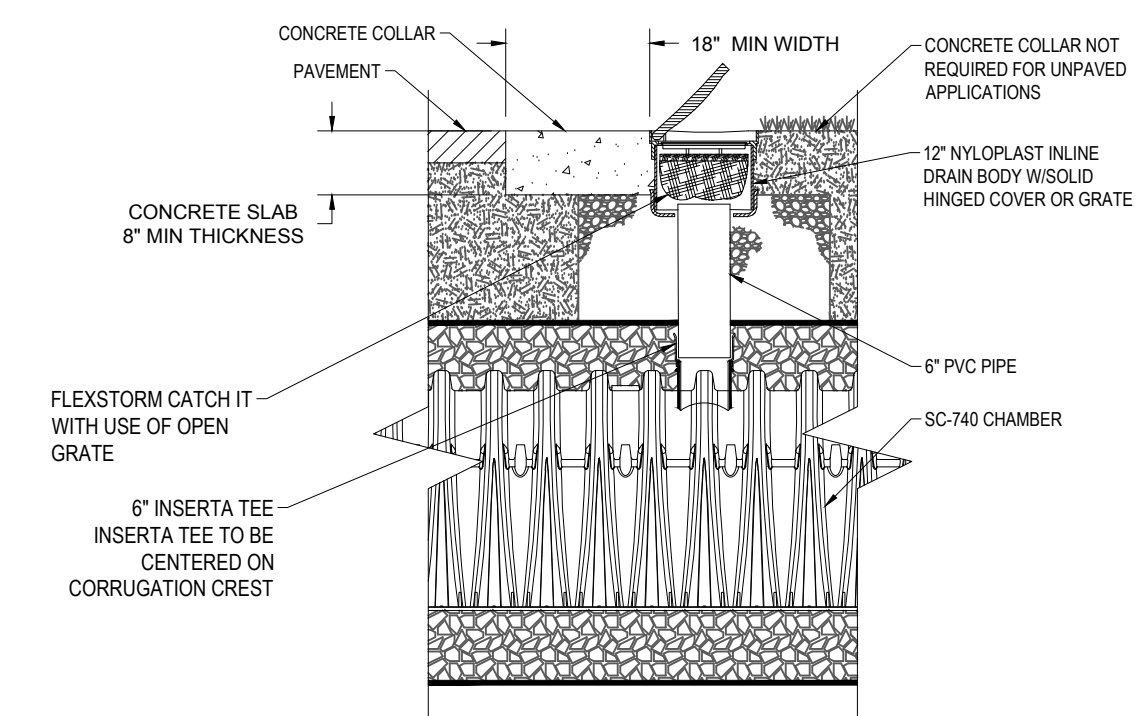
**STORMTECH SC-740 ISOLATOR ROW DETAIL**



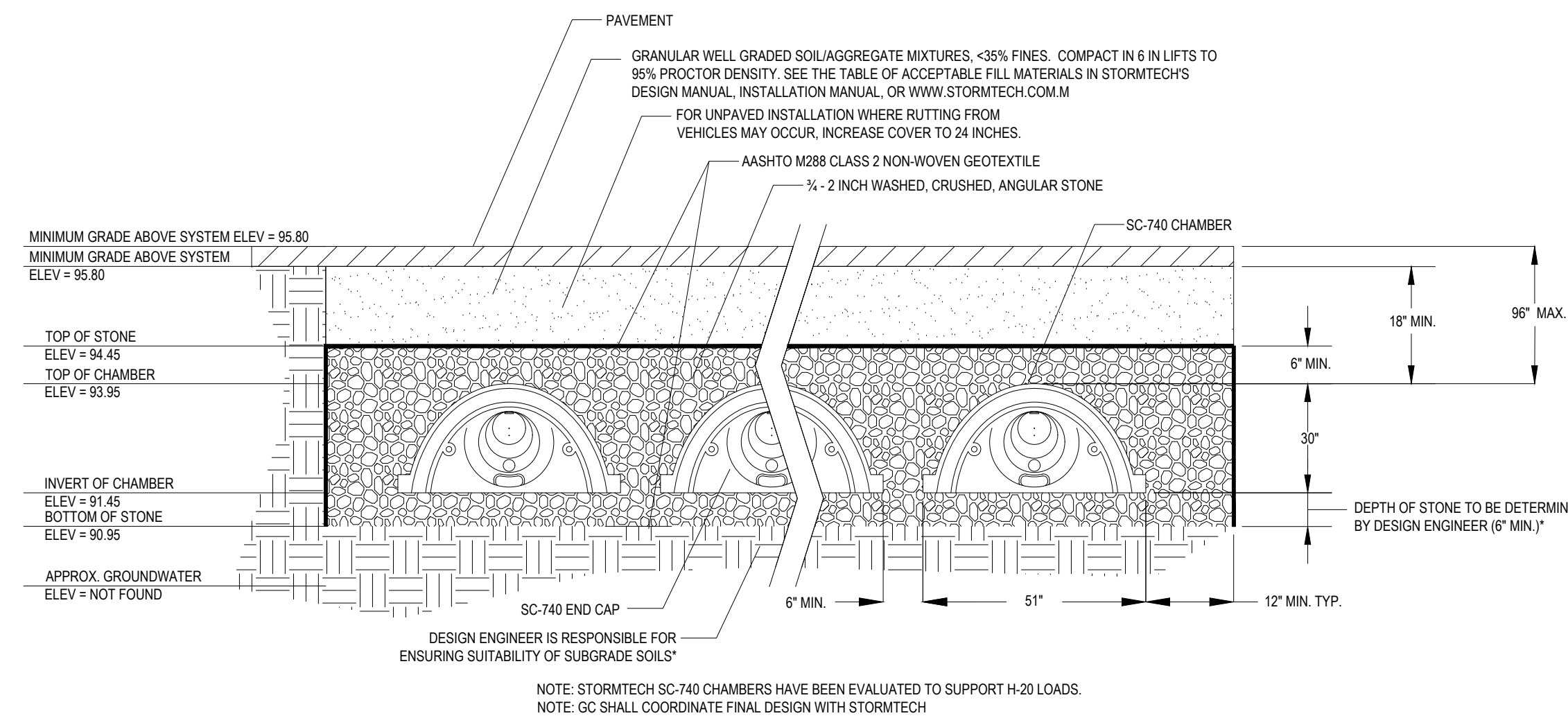
**STORMTECH SC-740 CHAMBER SYSTEM INDIVIDUAL UNIT DETAIL**



**TYPICAL HEADER PIPE DETAIL**

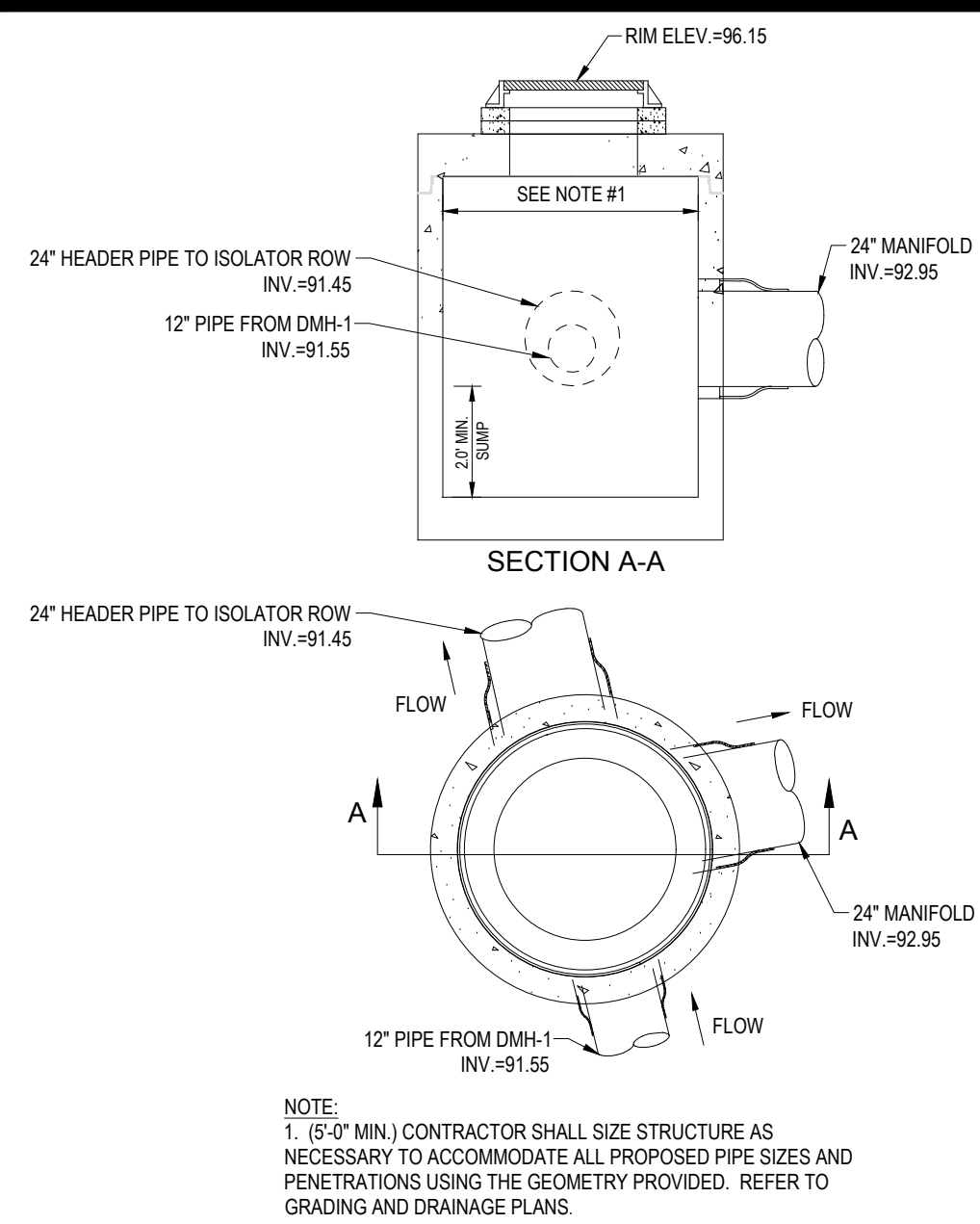


**STORMTECH SC-740 CHAMBER SYSTEM INSPECTION PORT DETAIL**



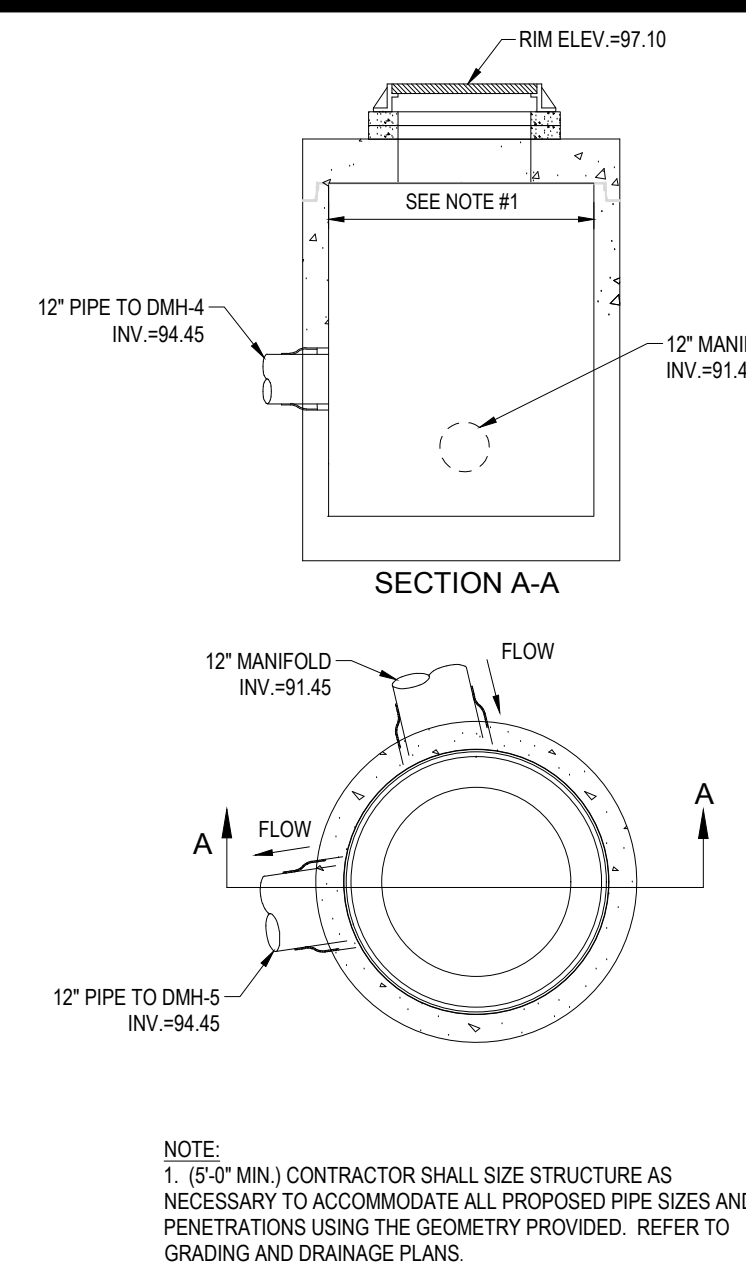
**STORMTECH SC-740 UNDERGROUND INFILTRATION SYSTEM**

N.T.S.



**INLET CONTROL STRUCTURE - 1 (ICS-1)**

N.T.S.



**OUTLET CONTROL STRUCTURE - 1 (OCS-1)**

N.T.S.

**BOHLER**

SITE CIVIL AND CONSULTING ENGINEERING  
 PROGRAM MANAGEMENT  
 LANDSCAPE ARCHITECTURE  
 SUSTAINABLE DESIGN  
 PERMITTING SERVICES  
 TRANSPORTATION SERVICES

**REVISIONS**

| REV | DATE       | COMMENT           | DRAWN BY | CHECKED BY |
|-----|------------|-------------------|----------|------------|
| 1   | 04/03/2023 | PER TOWN COMMENTS | JJ       | JF         |

**811**

Know what's below.  
 Call before you dig.  
 ALWAYS CALL 811  
 It's fast. It's free. It's the law.

**PERMIT SET**

THIS DRAWING IS INTENDED FOR MUNICIPAL AND/OR AGENCY REVIEW AND APPROVAL. IT IS NOT INTENDED AS A CONSTRUCTION DOCUMENT UNLESS INDICATED OTHERWISE.

PROJECT No.: MAA220275.00  
 DRAWN BY: CFD/JRJ  
 CHECKED BY: JF/RMM  
 DATE: 04/03/2023  
 CAD I.D.: MAA220275.00-SPPD-08

**PROPOSED SITE PLAN DOCUMENTS**

FOR

**CHASE**

PROPOSED BANK DEVELOPMENT

MAP: 17 LOT: 63  
 431 MAIN STREET,  
 TOWN OF READING,  
 MIDDLESEX COUNTY,  
 MASSACHUSETTS

**BOHLER**

352 TURNPIKE ROAD  
 SOUTHBOROUGH, MA 01772  
 Phone: (508) 480-9900  
 www.BohlerEngineering.com

SHEET TITLE:

**DETAIL SHEET**

SHEET NUMBER:

**C-903**

REVISION 1 - 04/03/2023

P:\2022\MAA220275.00\CAD\DRAWINGS\PLAN SET\CIVIL\SITE PLANS\MAA220275.00-SPPD-08.dwg - LAYOUT: C-903.DETL





WASHINGTON STREET  
(PUBLIC - VARIABLE WIDTH ROW)  
TWO WAY TRAFFIC (ASPHALT ROADWAY)

**CHASE**  
STANDARD SIDE ENTRY  
+/- 3,293 S.F.  
FFE=97.00

N/F LANDS OF  
413 MAIN STREET LLC  
BK. 26135, PG. 322.

**MAIN STREET**  
(AKA ROUTE 28)  
(PUBLIC - VARIABLE WIDTH ROW)  
(PER REF #8)  
TWO WAY TRAFFIC (ASPHALT ROADWAY)

**TOWN OF READING, MASSACHUSETTS  
LANDSCAPE REQUIREMENTS**

| SECTION                  | REQUIREMENTS  | CALCULATIONS/PROPOSED            |
|--------------------------|---|----------------------------------|
| 6.5: LANDSCAPE STANDARDS | A.) NO MORE THAN 50 PERCENT (50%) OF THE TREES, APPROVED TO BE PLANTED, SHALL BE OF ANY ONE SPECIES AND NO LESS THAN 25 PERCENT (25%) OF THE TOTAL TREES PLANTED SHALL BE OF ANY ONE SPECIES. TREES SHALL BE CHOSEN FROM A LIST PROVIDED BY THE TREE WARDEN, UNLESS AN ALTERNATIVE IS SPECIFICALLY APPROVED BY THE CPDC.<br>B.) TREES ALONG A PUBLIC WAY SHALL BE SPACED AT INTERVALS OF FIFTY (50) FEET. PROVIDED, HOWEVER, THAT NO TREES SHALL BE PLANTED WITHIN FIFTY (50) FEET OF AN INTERSECTION OR FUTURE INTERSECTION. TREES ON ONE (1) SIDE OF A STREET MAY BE SET EITHER OPPOSITE OR DIAGONALLY TO TREES ON THE OPPOSITE SIDE. TREES SHALL BE PLANTED TWO AND A HALF (2 1/2) FEET BEHIND THE SIDEWALK OR SIX (6) FEET BEHIND THE GUTTER LINE AND ALWAYS WITHIN THE RIGHT-OF-WAY. THE LOCATION OF ALL THE PROPOSED TREES MUST BE REVIEWED BY THE TREE WARDEN ON SITE AND APPROVED PRIOR TO INSTALLATION.<br>C.) THE MINIMUM ACCEPTABLE SIZE OF TREE TO BE PLANTED ALONG A PUBLIC WAY SHALL BE THREE (3) INCH TRUNK CALIPER AT FOUR (4) FEET ABOVE THE GRADE. AT THE TIME OF DELIVERY, THE TREE WARDEN MUST APPROVE THE PROPOSED TREES. EVERGREEN TREES SHALL BE AT LEAST EIGHT (8) FEET TALL AT THE TIME OF PLANTING. | PROVIDED<br>PROVIDED<br>PROVIDED |
| 11.1.5.6: PARKING LOTS   | A.) WHERE PARKING AREAS ARE ADJACENT TO RESIDENTIAL USES OR ZONING DISTRICTS, OR ROADWAYS WITH AT LEAST A COLLECTOR STATUS AS DESIGNATED ON THE COUNTY COMPREHENSIVE PLAN, PLANTINGS OF PREDOMINANTLY EVERGREEN SHRUBS OR TREES SPACED AT INTERVALS WHICH MAY BE EXPECTED TO FORM EFFECTIVE BUFFERING AND SCREENING AT LEAST 30 INCHES HIGH AT THE TIME OF PLANTING.  | PROVIDED                         |

**SEED MIX KEY**

- PROPOSED HYDROSEED
- PROPOSED CRUSHED STONE

**PLANT SCHEDULE**

| TREES            | QTY | BOTANICAL NAME                               | COMMON NAME                     | SIZE         | CONTAINER |
|------------------|-----|--|---------------------------------|--------------|-----------|
| QPZ              | 1   | QUERCUS PALustris 'RINGREEN'                 | GREEN PILLAR PIN OAK            | 3' CAL. MIN. | B&B       |
| CANOPY TREES     |     |  |                                 |              |           |
| ASS              | 1   | ACER SACCHARUM 'BONFIRE'                     | BONFIRE SUGAR MAPLE             | 3' CAL. MIN. | B&B       |
| LSS              | 1   | LIQUIDAMBAR STYRACIFLUA 'SLENDER SILHOUETTE' | SLENDER SILHOUETTE SWEET GUM    | 3' CAL. MIN. | B&B       |
| EVERGREEN TREES  |     |  |                                 |              |           |
| JK               | 5   | JUNIPERUS CHINENSIS 'KETELEERI'              | KETELEERI CHINESE JUNIPER       | 5-6' HT.     | B&B       |
| JS               | 7   | JUNIPERUS CHINENSIS 'SPARTAN'                | SPARTAN JUNIPER                 | 5-6' HT.     | B&B       |
| TDZ              | 10  | THUJA OCCIDENTALIS 'DARK GREEN'              | DARK AMERICAN ARBORVITAE        | 5-6' HT.     | B&B       |
| ORNAMENTAL TREES |     |  |                                 |              |           |
| MDW              | 1   | MALUS X DONALD WYMAN'                        | DONALD WYMAN CRAB APPLE         | 2.5' CAL.    | B&B       |
| SHRUBS           |     |  |                                 |              |           |
| AM               | 17  | AZALEA X 'MOTHER'S DAY'                      | MOTHER'S DAY AZALEA             | 2-3' HT.     | B&B       |
| DGN              | 16  | DEUTZIA GRACILIS 'NIKO'                      | SLENDER DEUTZIA                 | 18-24" HT.   | CONTAINER |
| HI               | 12  | HYDRANGEA ARBORESCENS 'NCHAS'                | INNOCENCE/LEWEE WHITE HYDRANGEA | 2' HT.       | B&B       |
| HIZ              | 14  | HYDRANGEA PANICULATA 'PEE WEE'               | PEE WEE PANICLE HYDRANGEA       | 18-24" HT.   | B&B       |
| ICS              | 9   | ILEX CRENATA 'STEEDS'                        | STEEDS JAPANESE HOLLY           | 30-36" HT.   | CONTAINER |
| IGS              | 11  | ILEX GLABRA 'SHAMROCK'                       | SHAMROCK INK BERRY              | 24-30" HT.   | CONTAINER |
| RK               | 10  | ROSA X 'RADSUNNY'                            | SUNNY KNOCK OUT YELLOW ROSE     | 24-30" HT.   | B&B       |
| TG               | 3   | TAXUS X MEDIA 'GREEN WAVE'                   | GREEN WAVE ANGLA-JAPANESE YEW   | 18-24" HT.   | B&B       |
| TMD              | 19  | TAXUS X MEDIA 'DENSIFORMIS'                  | DENSE YEWS                      | 24-30" HT.   | B&B       |
| PERENNIALS       |     |  |                                 |              |           |
| HHZ              | 28  | HEMEROCALLIS X 'HAPPY RETURNS'               | HAPPY RETURNS DAYLILY           | 1 GAL.       | CONTAINER |

**REVISIONS**

| REV | DATE       | COMMENT           | CHECKED BY |
|-----|------------|-------------------|------------|
| 1   | 04/03/2023 | PER TOWN COMMENTS | JJ<br>JF   |

**811**  
Know what's below.  
Call before you dig.  
ALWAYS CALL 811  
It's fast. It's free. It's the law.

**PERMIT SET**

THIS DRAWING IS INTENDED FOR MUNICIPAL AND/OR AGENCY REVIEW AND APPROVAL. IT IS NOT INTENDED AS A CONSTRUCTION DOCUMENT UNLESS INDICATED OTHERWISE.

PROJECT No.: MAA220275.00  
DRAWN BY: CF/DJR/UM  
CHECKED BY: JF/RMM  
DATE: 04/03/2023  
CAD ID.: MAA220275.00-LSCP-0A

**PROPOSED SITE PLAN DOCUMENTS**

FOR

**CHASE**

PROPOSED BANK DEVELOPMENT  
MAP: 17 LOT: 63  
431 MAIN STREET,  
TOWN OF READING,  
MIDDLESEX COUNTY,  
MASSACHUSETTS

**BOHLER**

352 TURNPIKE ROAD  
SOUTHBOROUGH, MA 01772  
Phone: (508) 480-9900  
[www.BohlerEngineering.com](http://www.BohlerEngineering.com)

**OWNER MAINTENANCE RESPONSIBILITIES**

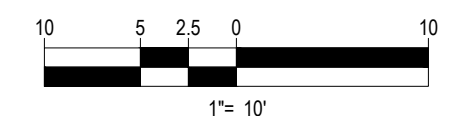
UPON OWNERS (OR OWNER CONTRACTORS) COMPLETION OF LANDSCAPING WORK, THE OWNER IS FULLY RESPONSIBLE FOR ALL FUTURE MAINTENANCE, CARE, UPKEEP, WATERING, AND TRIMMING OF ALL INSTALLED VEGETATION, PLANTS, TREE, SHRUBS, GRASSES, ORNAMENTAL PLANTS AND FLOWERS, FLOWERS, GROUND COVER, AND LANDSCAPING, INCLUDING ALL LANDSCAPE ISLANDS AND AREAS ADJACENT OR PART OF THE LANDSCAPED AREAS. THIS RESPONSIBILITY INCLUDES, BUT IS NOT LIMITED TO, THE FOLLOWING:

- TREES ADJACENT TO WALKWAYS AND AREAS OF PEDESTRIAN TRAFFIC MUST BE MAINTAINED TO ASSURE THAT ANY BRANCHES MUST BE LIMBED UP TO A CLEARANCE HEIGHT OF 7 FT. (FROM ALL PEDESTRIAN SURFACES) OR PRUNED BACK TO AVOID ANY INTERFERENCE WITH THE TYPICAL PATH OF TRAVEL.
- TREES WITHIN VEHICULAR SIGHT LINES, AS ILLUSTRATED ON THE LANDSCAPE PLAN, ARE TO BE TRIMMED TO A CLEARANCE HEIGHT OF 7 FT. (FROM ALL PAVED, TRAVELED SURFACES), OR AS OTHERWISE INDICATED ON THE PLANS.
- VEGETATIVE GROUND COVER, SHRUBS AND ORNAMENTAL PLANTS AND GRASSES MUST BE TRIMMED SO THAT NO PORTION OF THE PLANT EXCEEDS 30 INCHES ABOVE GRADE (OF ALL PAVED, TRAVELED SURFACES) ALONG AND WITHIN THE SIGHT LINES OF PARKING LOTS AND INGRESS-EGRESS WAYS.
- FALLING PLANT FLOWERS, FRUIT, SEEDS AND DEBRIS DROPPINGS ARE TO BE REMOVED IMMEDIATELY FROM VEHICULAR AND PEDESTRIAN TRAFFIC AREAS TO PREVENT TRIPPING, SLIPPING OR ANY OTHER HAZARDS.

THESE REQUIREMENTS DO NOT AFFECT THE PLANT LIFE GUARANTEE. THE LANDSCAPE CONTRACTOR IS REQUIRED TO PROVIDE.

**THIS PLAN TO BE UTILIZED FOR  
LANDSCAPE PURPOSES ONLY**

**REFER LANDSCAPE NOTES &  
DETAILS SHEET FOR LANDSCAPE  
NOTES AND DETAILS**



SHEET TITLE:  
**LANDSCAPE PLAN**

SHEET NUMBER:  
**C-701**

REVISION 1 - 04/03/2023

P:\2022\MAA220275.00\CAD\DRAWINGS\PLAN SET\CIVIL SITE PLANS\MAA220275.00-LSCP-0A.dwg LAYOUT: C:\701.LAND



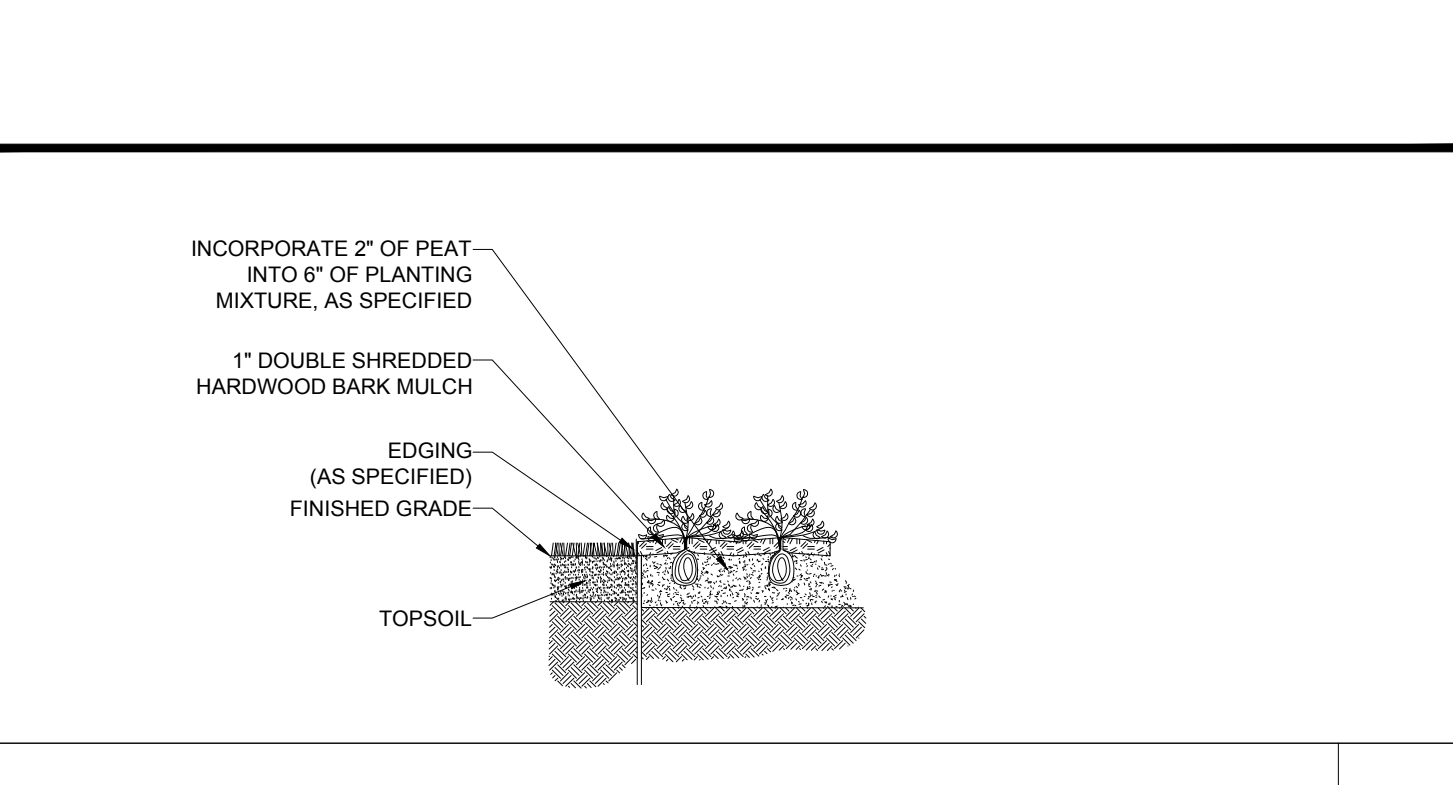
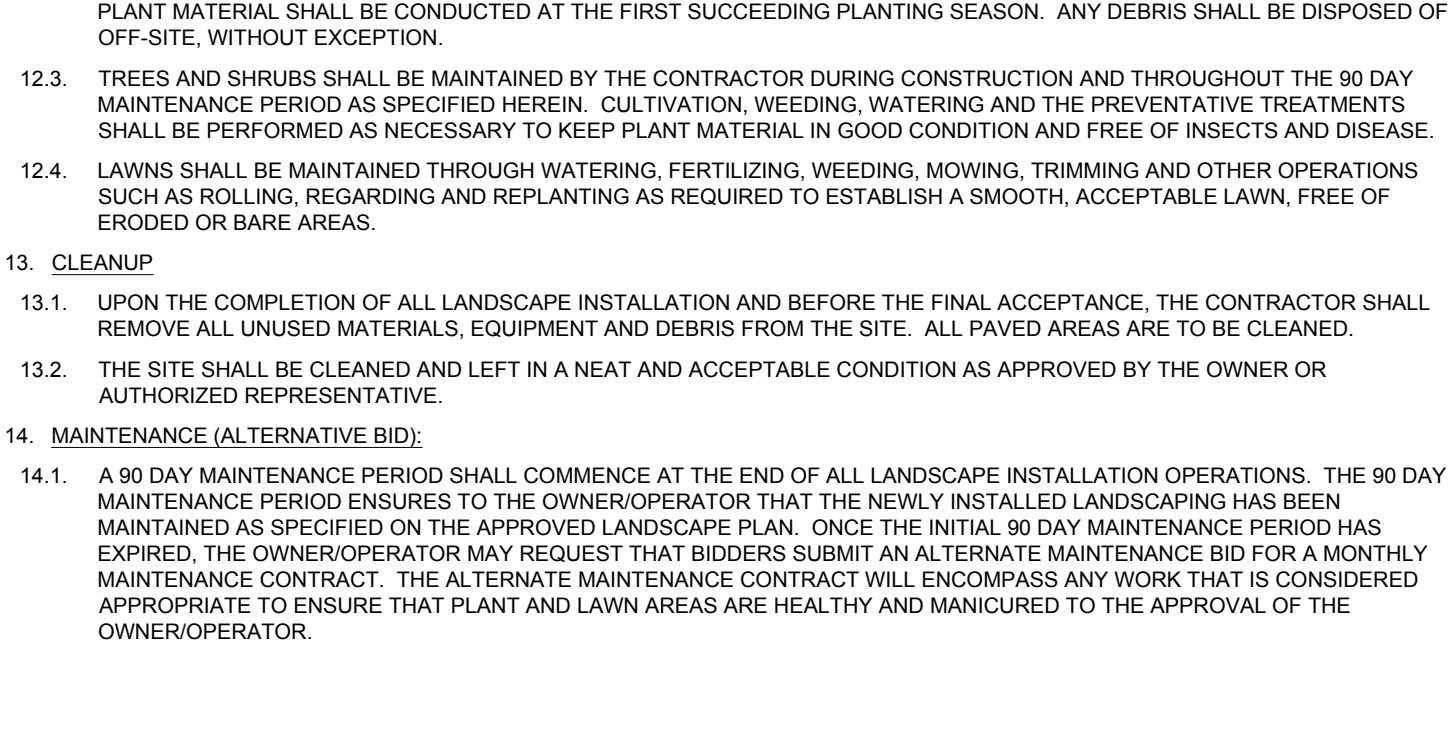
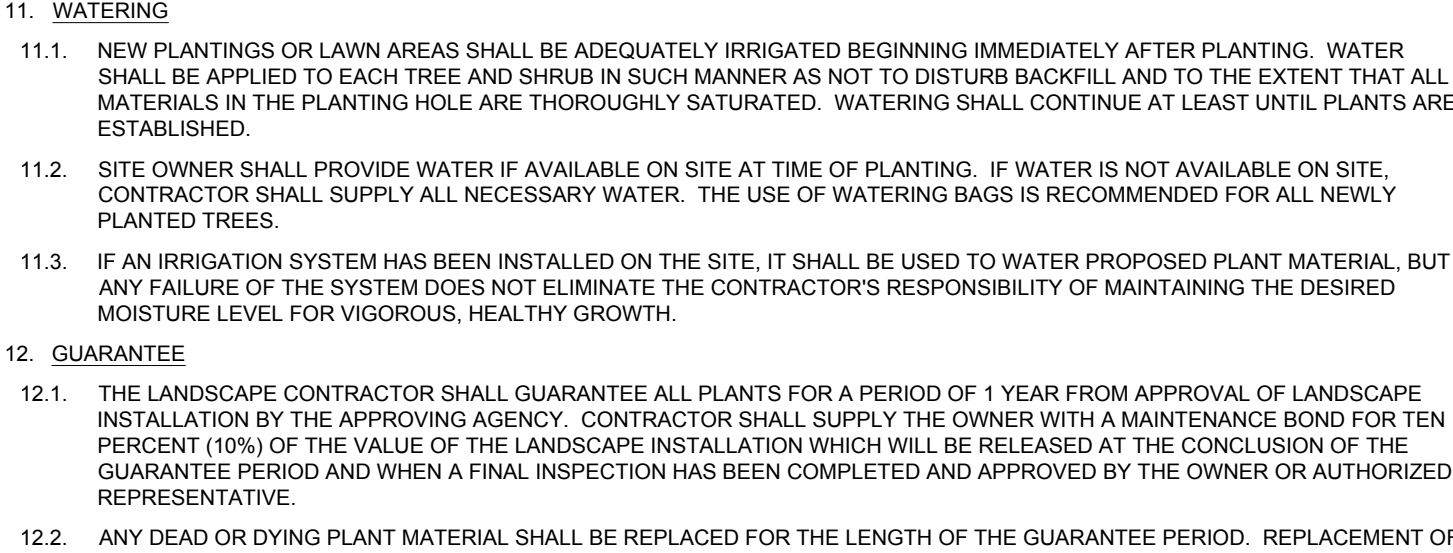
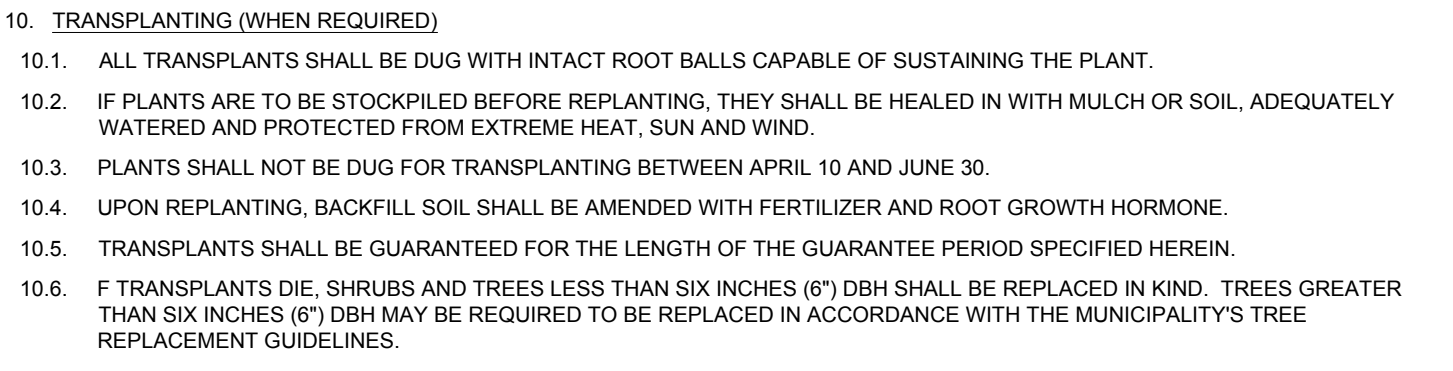
**LANDSCAPE SPECIFICATIONS**

- SCOPE OF WORK**
  - THE LANDSCAPE CONTRACTOR SHALL BE REQUIRED TO PERFORM ALL CLEARING, FINISHED GRADING, SOIL PREPARATION, PERMANENT SEEDING OR SODDING, PLANTING AND MULCHING INCLUDING ALL LABOR, MATERIALS, TOOLS & EQUIPMENT NECESSARY FOR THE COMPLETION OF THIS PROJECT, UNLESS OTHERWISE CONTRACTED BY THE GENERAL CONTRACTOR.
- MATERIALS**
  - GENERAL - ALL HARDSCAPE MATERIALS SHALL MEET OR EXCEED SPECIFICATIONS AS OUTLINED IN THE STATE DEPARTMENT OF TRANSPORTATION'S SPECIFICATIONS.
  - TOPSOIL - NATURAL, FRIABLE, LOAMY SILT SOIL HAVING AN ORGANIC CONTENT NOT LESS THAN 5%, A PH RANGE BETWEEN 4.5-7.0. IT SHALL BE FREE OF DEBRIS, ROCKS LARGER THAN ONE INCH (1"), WOOD, ROOTS, VEGETABLE MATTER AND CLAY CLODS.
  - LAWN - ALL DISTURBED AREAS ARE TO BE TREATED WITH A MINIMUM 6" THICK LAYER OF TOPSOIL, OR AS DIRECTED BY THE LOCAL ORDINANCE OR CLIENT, AND SEEDED OR SODDED IN ACCORDANCE WITH THE PERMANENT STABILIZATION METHODS INDICATED ON THE LANDSCAPE PLAN.
    - LAWN SEED MIXTURE SHALL BE FRESH, CLEAN NEW CROP SEED.
    - SOD SHALL BE STRONGLY ROOTED, WEED AND DISEASE/PEST FREE WITH A UNIFORM THICKNESS. SOD INSTALLED ON SLOPES GREATER THAN 4:1 SHALL BE PEGGED TO PLACE.
  - MULCH - ALL PLANTING BEDS SHALL BE MULCHED WITH A 3" THICK LAYER OF DOUBLE SHREDDED HARDWOOD BARK MULCH, UNLESS OTHERWISE STATED ON THE LANDSCAPE PLAN AND/OR LANDSCAPE PLAN NOTES/DETAILS.
  - FERTILIZER
    - FERTILIZER SHALL BE DELIVERED TO THE SITE MIXED AS SPECIFIED IN THE ORIGINAL UNOPENED STANDARD BAGS SHOWING WEIGHT, ANALYSIS AND NAME OF MANUFACTURER. FERTILIZER SHALL BE STORED IN A WEATHERPROOF PLACE SO THAT IT CAN BE KEPT DRY PRIOR TO USE.
    - FOR THE PURPOSE OF BIDDING, ASSUME THAT FERTILIZER SHALL BE 10% NITROGEN, 6% PHOSPHORUS AND 4% POTASSIUM BY WEIGHT. A FERTILIZER SHOULD NOT BE SELECTED WITHOUT A SOIL TEST PERFORMED BY A CERTIFIED SOIL LABORATORY.
  - PLANT MATERIAL
    - ALL PLANTS SHALL IN ALL CASES CONFORM TO THE REQUIREMENTS OF THE "AMERICAN STANDARD FOR NURSERY STOCK" (ANSI Z60.1), LATEST EDITION, AS PUBLISHED BY THE AMERICAN NURSERY & LANDSCAPE ASSOCIATION (FORMERLY THE AMERICAN ASSOCIATION OF NURSERYMEN).
    - IN ALL CASES, BOTANICAL NAMES SHALL TAKE PRECEDENCE OVER COMMON NAMES FOR ANY AND ALL PLANT MATERIAL.
    - PLANTS SHALL BE LEGIBLY TAGGED WITH THE PROPER NAME AND SIZE. TAGS ARE TO REMAIN ON AT LEAST ONE PLANT OF EACH SPECIES FOR VERIFICATION PURPOSES DURING THE FINAL INSPECTION.
    - TREES WITH ABRASION OF THE BARK, SUN SCALDS, DISFIGURATION OR FRESH CUTS OF LIMBS OVER 1/2", WHICH HAVE NOT BEEN COMPLETELY CALLEDUS, SHALL BE REJECTED. PLANTS SHALL NOT BE BOUND WITH WIRE OR ROPE AT ANY TIME SO AS TO DAMAGE THE BARK OR BREAK BRANCHES.
    - ALL PLANTS SHALL BE TYPICAL OF THEIR SPECIES OR VARIETY AND SHALL HAVE A NORMAL HABIT OF GROWTH, WELL DEVELOPED BRANCHES, DENSELY FOLIATED, VIGOROUS ROOT SYSTEMS AND BE FREE OF DISEASE, INSECTS, PESTS, EGGS OR LARVAE.
    - CALIPER MEASUREMENTS OF NURSERY GROWN TREES SHALL BE TAKEN AT A POINT ON THE TRUNK SIX INCHES (6") ABOVE THE NATURAL GRADE FOR TREES UP TO AND INCLUDING A FOUR INCH (4") CALIPER SIZE. IF THE CALIPER AT SIX INCHES (6") ABOVE THE GROUND EXCEEDS FOUR INCHES (4") IN CALIPER, THE CALIPER SHOULD BE MEASURED AT A POINT 12" ABOVE THE NATURAL GRADE.
    - SHRUBS SHALL BE MEASURED TO THE AVERAGE HEIGHT OR SPREAD OF THE SHRUB, AND NOT TO THE LONGEST BRANCH.
    - TREES AND SHRUBS SHALL BE HANDLED WITH CARE BY THE ROOT BALL.
- GENERAL WORK PROCEDURES**
  - CONTRACTOR TO UTILIZE WORKMANLIKE INDUSTRY STANDARDS IN PERFORMING ALL LANDSCAPE CONSTRUCTION. THE SITE IS TO BE LEFT IN A CLEAN STATE AT THE END OF EACH WORKDAY. ALL DEBRIS, MATERIALS AND TOOLS SHALL BE PROPERLY STORED, STOCKPILED OR DISPOSED OF.
  - WASTE MATERIALS AND DEBRIS SHALL BE COMPLETELY DISPOSED OF AT THE CONTRACTOR'S EXPENSE. DEBRIS SHALL NOT BE BURIED, INCLUDING ORGANIC MATERIALS, BUT SHALL BE REMOVED COMPLETELY FROM THE SITE.
- SITE PREPARATIONS**
  - BEFORE AND DURING PRELIMINARY GRADING AND FINISHED GRADING, ALL WEEDS AND GRASSES SHALL BE DUG OUT BY THE ROOTS AND DISPOSED OF IN ACCORDANCE WITH GENERAL WORK PROCEDURES OUTLINED HEREIN.
  - ALL EXISTING TREES TO REMAIN SHALL BE PRUNED TO REMOVE ANY DAMAGED BRANCHES. THE ENTIRE LIMB OF ANY DAMAGED BRANCH SHALL BE CUT OFF AT THE BRANCH COLLAR. CONTRACTOR SHALL ENSURE THAT CUTS ARE SMOOTH AND STRAIGHT. ANY EXPOSED ROOTS SHALL BE CUT BACK WITH CLEAN, SHARP TOOLS AND TOPSOIL SHALL BE PLACED AROUND THE REMAINDER OF THE ROOTS. EXISTING TREES SHALL BE MONITORED ON A REGULAR BASIS FOR ADDITIONAL ROOT OR BRANCH DAMAGE AS A RESULT OF CONSTRUCTION. ROOTS SHALL NOT BE LEFT EXPOSED FOR MORE THAN ONE (1) DAY. CONTRACTOR SHALL WATER EXISTING TREES AS NEEDED TO PREVENT SHOCK OR DECLINE.
  - CONTRACTOR SHALL ARRANGE TO HAVE A UTILITY STAKE-OUT TO LOCATE ALL UNDERGROUND UTILITIES PRIOR TO INSTALLATION OF ANY LANDSCAPE MATERIAL. UTILITY COMPANIES SHALL BE CONTACTED THREE (3) DAYS PRIOR TO THE BEGINNING OF WORK.
- TREE PROTECTION**
  - CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING TREES TO REMAIN. A TREE PROTECTION ZONE SHALL BE ESTABLISHED AT THE DRIP LINE OR AT THE LIMIT OF CONSTRUCTION DISTURBANCE, WHICHEVER IS GREATER. LOCAL STANDARDS THAT MAY REQUIRE A MORE STRICT TREE PROTECTION ZONE SHALL BE HONORED.
  - A FORTY-EIGHT INCH (48") HIGH WOODEN SNOW FENCE OR ORANGE COLORED HIGH-DENSITY "VISI-FENCE", OR APPROVED EQUAL, MOUNTED ON STEEL POSTS SHALL BE PLACED ALONG THE BOUNDARY OF THE TREE PROTECTION ZONE. POSTS SHALL BE LOCATED AT A MAXIMUM OF EIGHT FEET (8') ON CENTER OR AS INDICATED WITHIN THE TREE PROTECTION DETAIL.
  - WHEN THE TREE PROTECTION FENCING HAS BEEN INSTALLED, IT SHALL BE INSPECTED BY THE APPROVING AGENCY PRIOR TO DEMOLITION, GRADING, TREE CLEARING OR ANY OTHER CONSTRUCTION. THE FENCING ALONG THE TREE PROTECTION ZONE SHALL BE REGULARLY INSPECTED BY THE LANDSCAPE CONTRACTOR AND MAINTAINED UNTIL ALL CONSTRUCTION ACTIVITY HAS BEEN COMPLETED.
  - AT NO TIME SHALL MACHINERY, DEBRIS, FALLEN TREES OR OTHER MATERIALS BE PLACED, STOCKPILED OR LEFT STANDING IN THE TREE PROTECTION ZONE.
- SOIL MODIFICATIONS**
  - CONTRACTOR SHALL ATTAIN A SOIL TEST FOR ALL AREAS OF THE SITE PRIOR TO CONDUCTING ANY PLANTING. SOIL TESTS SHALL BE PERFORMED BY A CERTIFIED SOIL LABORATORY.
  - LANDSCAPE CONTRACTOR SHALL REPORT ANY SOIL OR DRAINAGE CONDITIONS CONSIDERED DETRIMENTAL TO THE GROWTH OF PLANT MATERIAL. SOIL MODIFICATIONS, AS SPECIFIED HEREIN, MAY NEED TO BE CONDUCTED BY THE LANDSCAPE CONTRACTOR DEPENDING ON SITE CONDITIONS.
  - THE FOLLOWING AMENDMENTS AND QUANTITIES ARE APPROXIMATE AND ARE FOR BIDDING PURPOSES ONLY. COMPOSITION OF AMENDMENTS SHOULD BE REVISED DEPENDING ON THE OUTCOME OF A TOPSOIL ANALYSIS PERFORMED BY A CERTIFIED SOIL LABORATORY.
    - TO INCREASE A SANDY SOIL'S ABILITY TO RETAIN WATER AND NUTRIENTS, THOROUGHLY TILL ORGANIC MATTER INTO THE TOP 6-12". USE COMPOSTED BARK, COMPOSTED LEAF MULCH OR PEAT MOSS. ALL PRODUCTS SHOULD BE COMPOSTED TO A DARK COLOR AND BE FREE OF PIECES WITH IDENTIFIABLE LEAF OR WOOD STRUCTURE. AVOID MATERIAL WITH A PH HIGHER THAN 7.5.
    - TO INCREASE DRAINAGE, MODIFY HEAVY CLAY OR SILT (MORE THAN 40% CLAY OR SILT) BY ADDING COMPOSTED PINE BARK (UP TO 30% BY VOLUME) AND/OR AGRICULTURAL GYPSUM. COARSE SAND MAY BE USED IF ENOUGH IS ADDED TO BRING THE SAND CONTENT TO MORE THAN 60% OF THE TOTAL MIX. SUBSURFACE DRAINAGE LINES MAY NEED TO BE ADDED TO INCREASE DRAINAGE.
    - MODIFY EXTREMELY SANDY SOILS (MORE THAN 85%) BY ADDING ORGANIC MATTER AND/OR DRY, SHREDDED CLAY LOAM UP TO 30% OF THE TOTAL MIX.
- FINISHED GRADING**
  - UNLESS OTHERWISE CONTRACTED, THE LANDSCAPE CONTRACTOR SHALL BE RESPONSIBLE FOR THE INSTALLATION OF TOPSOIL AND THE ESTABLISHMENT OF FINE-GRADING WITHIN THE DISTURBANCE AREA OF THE SITE.
  - LANDSCAPE CONTRACTOR SHALL VERIFY THAT SUBGRADE FOR INSTALLATION OF TOPSOIL HAS BEEN ESTABLISHED. THE SUBGRADE OF THE SITE MUST MEET THE FINISHED GRADE LESS THE REQUIRED TOPSOIL THICKNESS (1").
  - ALL LAWN AND PLANTING AREAS SHALL BE GRADED TO A SMOOTH, EVEN AND UNIFORM PLANE WITH NO ABRUPT CHANGE OF SURFACE AS DEPICTED WITHIN THIS SET OF CONSTRUCTION PLANS, UNLESS OTHERWISE DIRECTED BY THE PROJECT ENGINEER OR LANDSCAPE ARCHITECT.
  - ALL PLANTING AREAS SHALL BE GRADED AND MAINTAINED TO ALLOW FREE FLOW OF SURFACE WATER IN AND AROUND THE PLANTING BEDS. STANDING WATER SHALL NOT BE PERMITTED IN PLANTING BEDS.
- TOPSOILING**
  - CONTRACTOR SHALL PROVIDE A 6" THICK MINIMUM LAYER OF TOPSOIL, OR AS DIRECTED BY THE LOCAL ORDINANCE OR CLIENT, IN ALL PLANTING AREAS. TOPSOIL SHOULD BE SPREAD OVER A PREPARED SURFACE IN A UNIFORM LAYER TO ACHIEVE THE DESIRED COMPACTED THICKNESS.
  - ON-SITE TOPSOIL MAY BE USED TO SUPPLEMENT THE TOTAL AMOUNT REQUIRED. TOPSOIL FROM THE SITE MAY BE REJECTED IF IT HAS NOT BEEN PROPERLY REMOVED, STORED AND PROTECTED PRIOR TO CONSTRUCTION.
  - CONTRACTOR SHALL FURNISH TO THE APPROVING AGENCY AN ANALYSIS OF BOTH IMPORTED AND ON-SITE TOPSOIL TO BE UTILIZED IN ALL PLANTING AREAS. THE PH AND NUTRIENT LEVELS MAY NEED TO BE ADJUSTED THROUGH SOIL MODIFICATIONS AS NEEDED TO ACHIEVE THE REQUIRED LEVELS AS SPECIFIED IN THE MATERIALS SECTION ABOVE.
  - ALL LAWN AREAS ARE TO BE CULTIVATED TO A DEPTH OF SIX INCHES (6"). ALL DEBRIS EXPOSED FROM EXCAVATION AND CULTIVATION SHALL BE DISPOSED OF IN ACCORDANCE WITH GENERAL WORK PROCEDURES SECTION ABOVE. THE FOLLOWING SHALL BE TILLED INTO THE TOP FOUR INCHES (4") IN TWO DIRECTIONS (QUANTITIES BASED ON A 1,000 SQUARE FOOT AREA - FOR BID PURPOSES ONLY [SEE SPECIFICATION 6.A.]):
    - 20 POUNDS 'GRO-POWER' OR APPROVED SOIL CONDITIONER/FERTILIZER
    - 20 POUNDS NITRO-FORM (COURSE) 38-0-0 BLUE CHIP OR APPROVED NITROGEN FERTILIZER
  - THE SPREADING OF TOPSOIL SHALL NOT BE CONDUCTED UNDER MUDDY OR FROZEN CONDITIONS.
- PLANTING**
  - INsofar THAT IT IS FEASIBLE, PLANT MATERIAL SHALL BE PLANTED ON THE DAY OF DELIVERY. IN THE EVENT THAT THIS IS NOT POSSIBLE, LANDSCAPE CONTRACTOR SHALL PROTECT UNINSTALLED PLANT MATERIAL. PLANTS SHALL NOT REMAIN UNPLANTED FOR LONGER THAN A THREE DAY PERIOD AFTER DELIVERY. PLANTS THAT WILL NOT BE PLANTED FOR A PERIOD OF TIME GREATER THAN THREE DAYS SHALL BE HEALED IN WITH TOPSOIL OR MULCH TO HELP PRESERVE ROOT MOISTURE.
  - PLANTING OPERATIONS SHALL BE PERFORMED DURING PERIODS WITHIN THE PLANTING SEASON WHEN WEATHER AND SOIL CONDITIONS ARE SUITABLE AND IN ACCORDANCE WITH ACCEPTED LOCAL PRACTICE. PLANTS SHALL NOT BE INSTALLED IN TOPSOIL THAT IS IN A MUDDY OR FROZEN CONDITION.

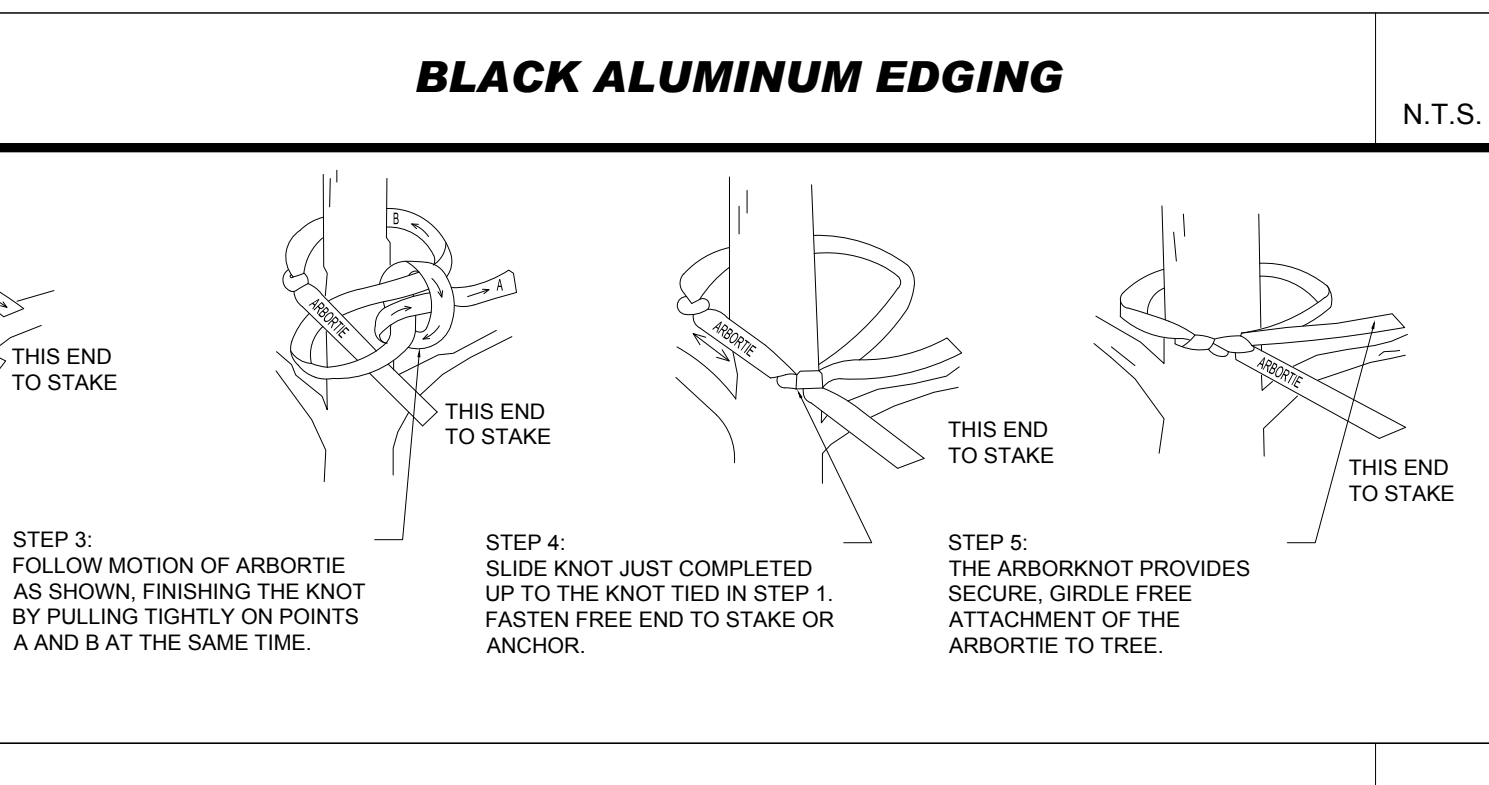
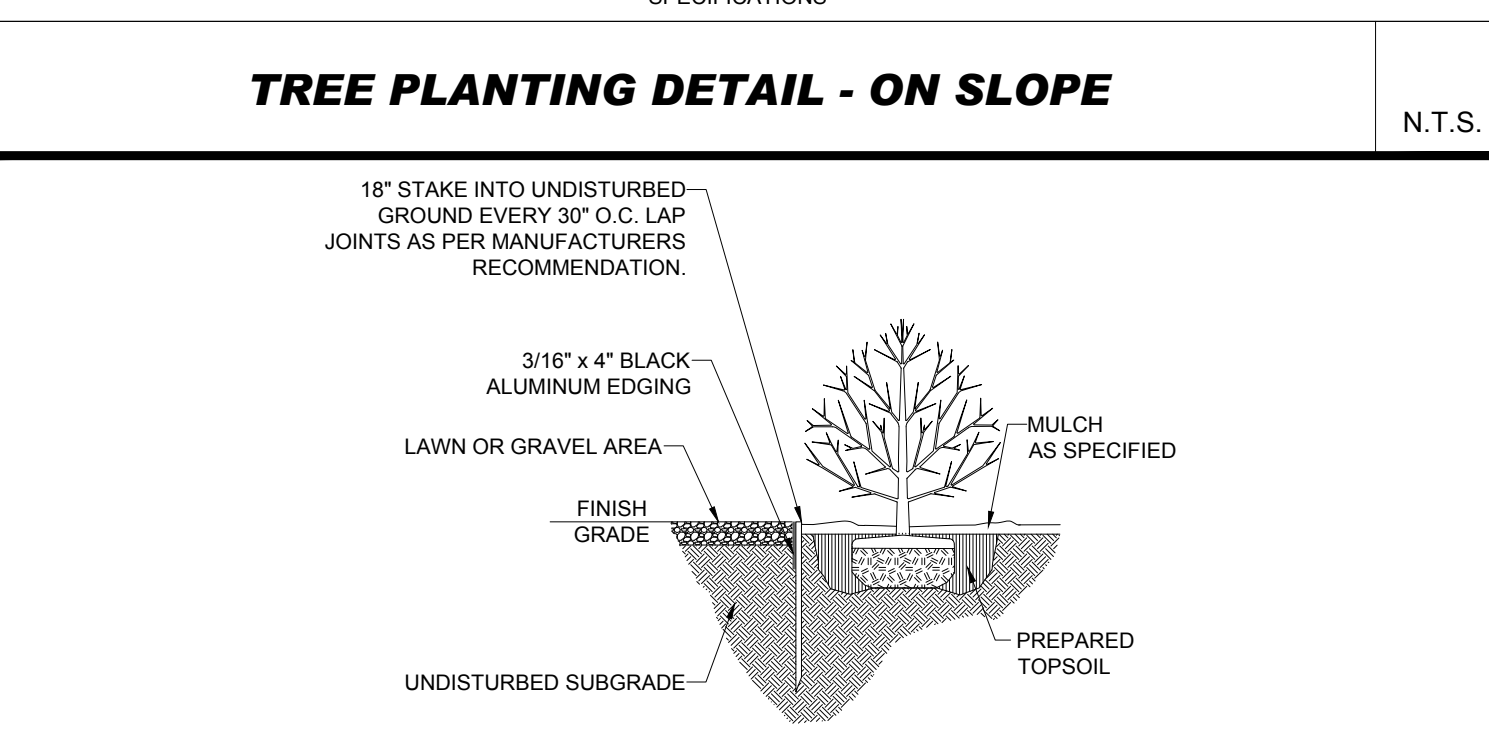
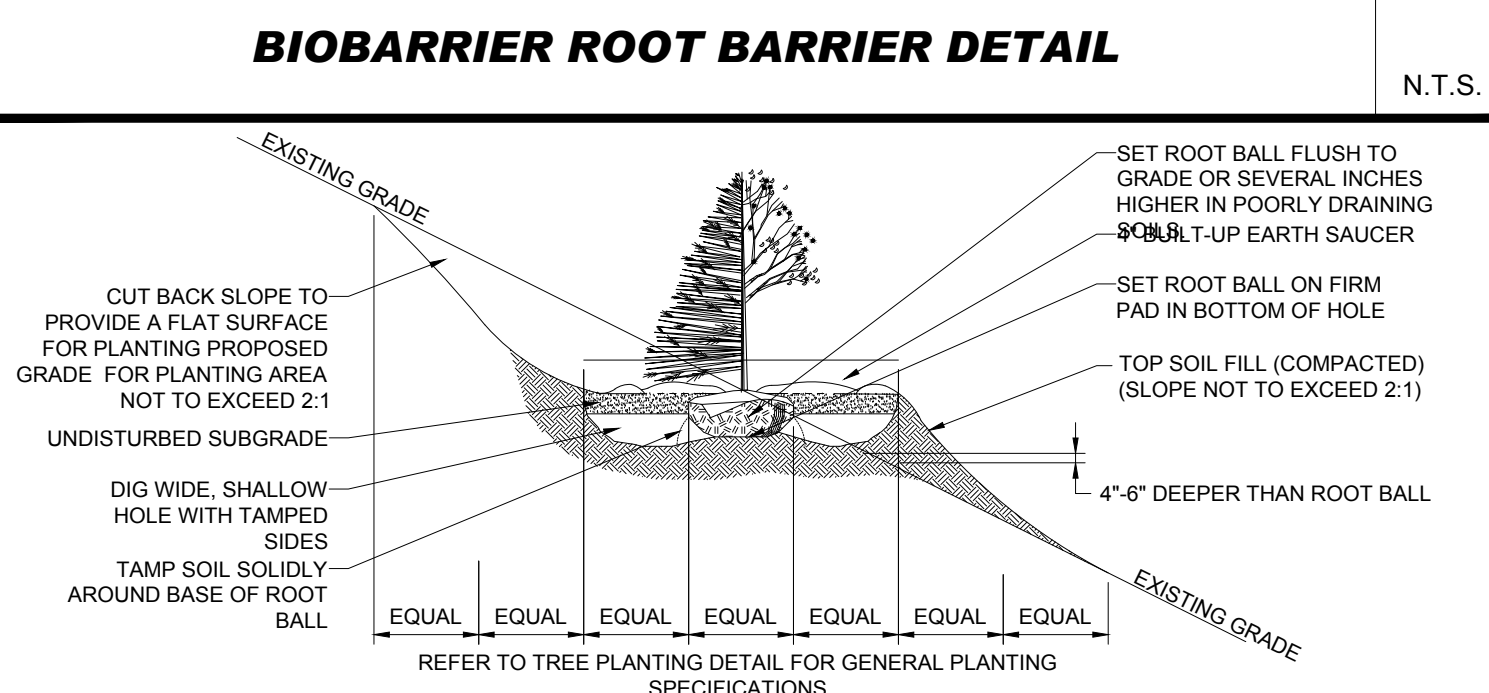
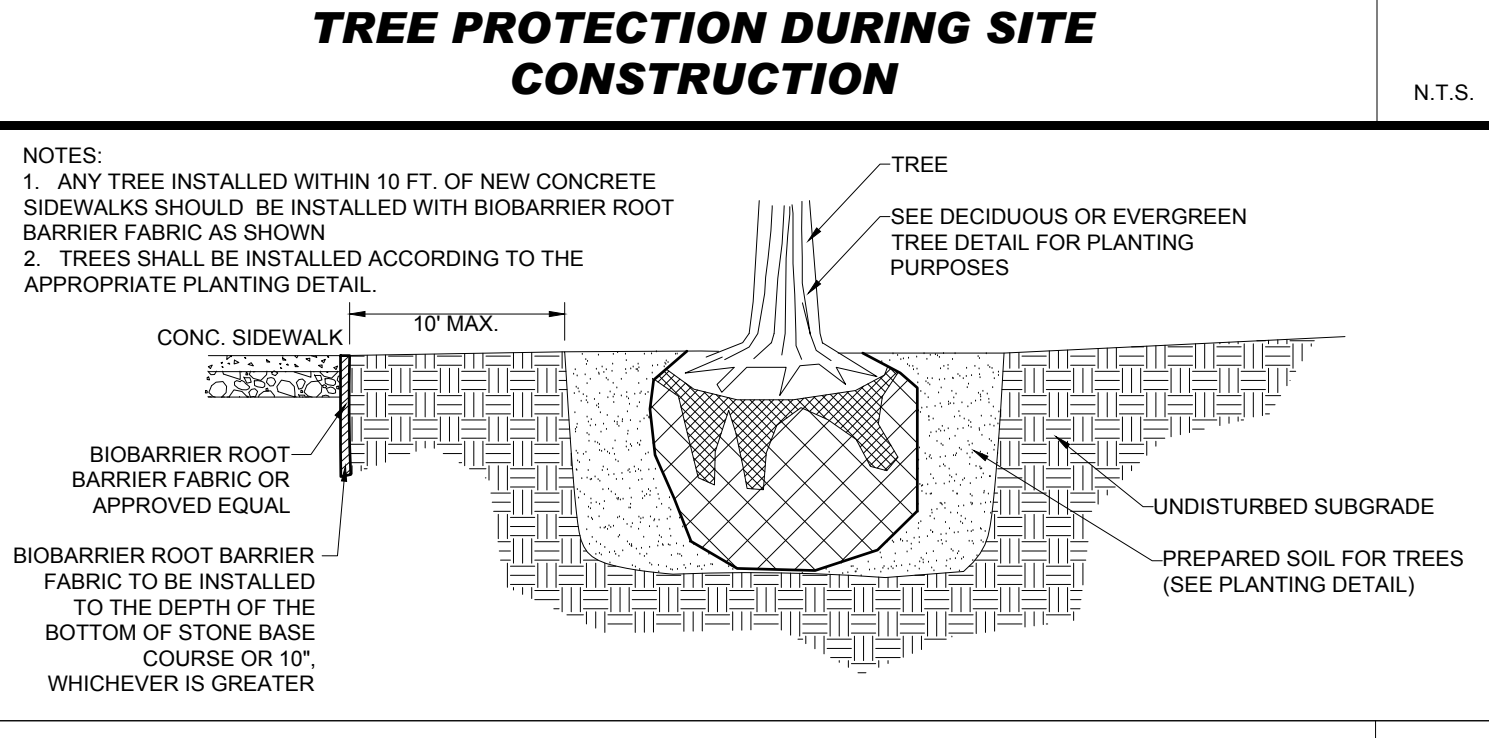
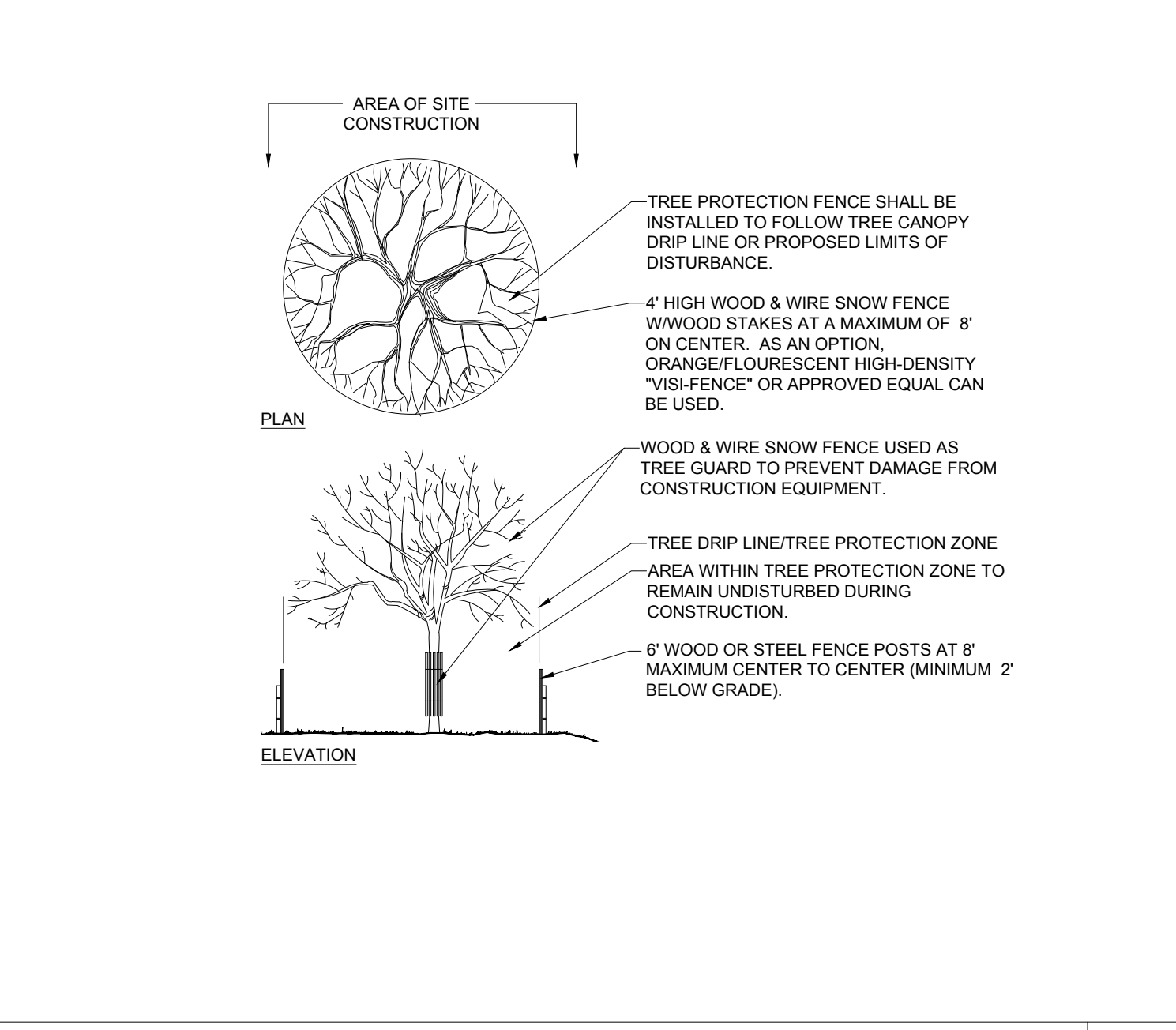
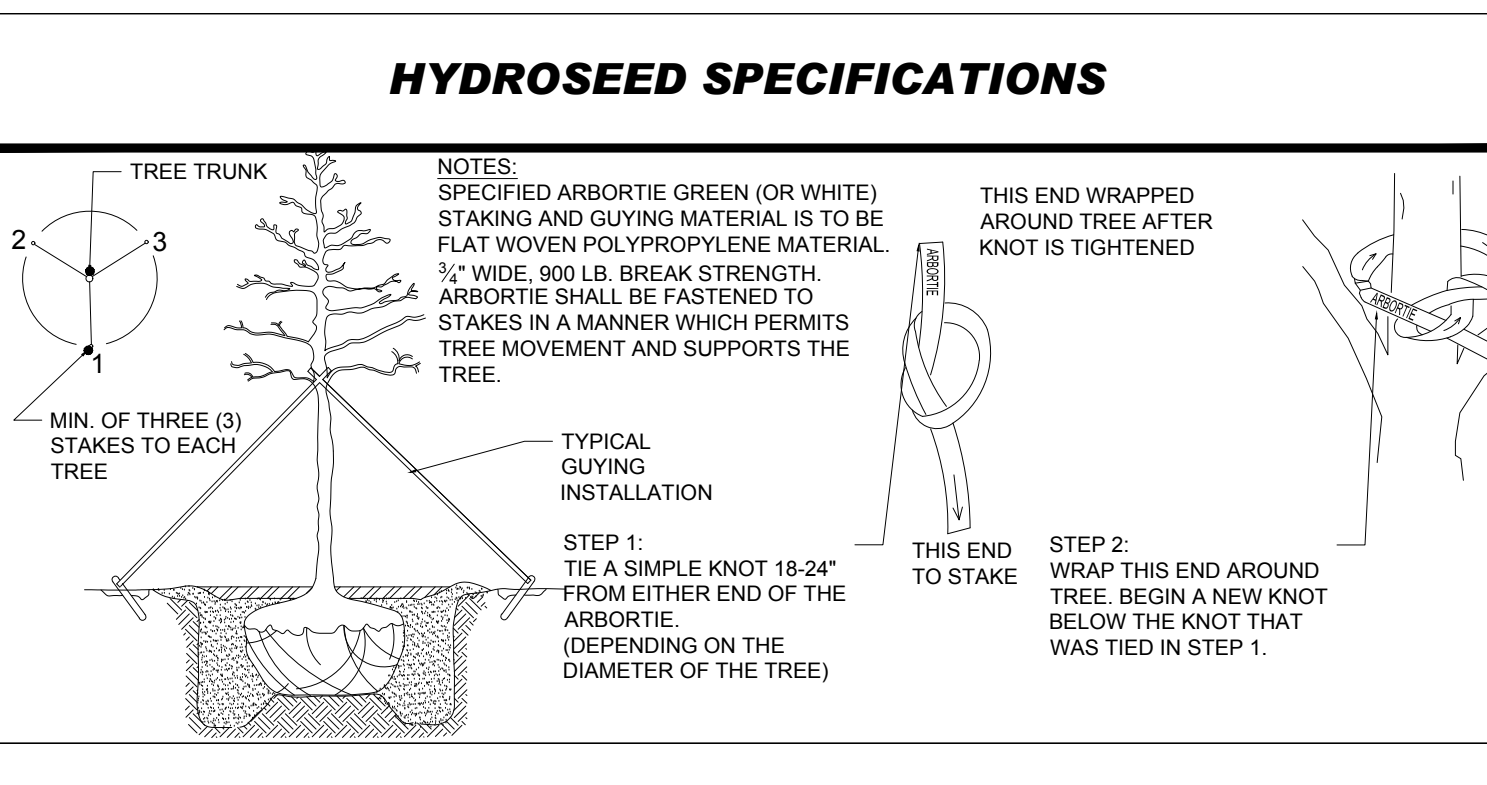
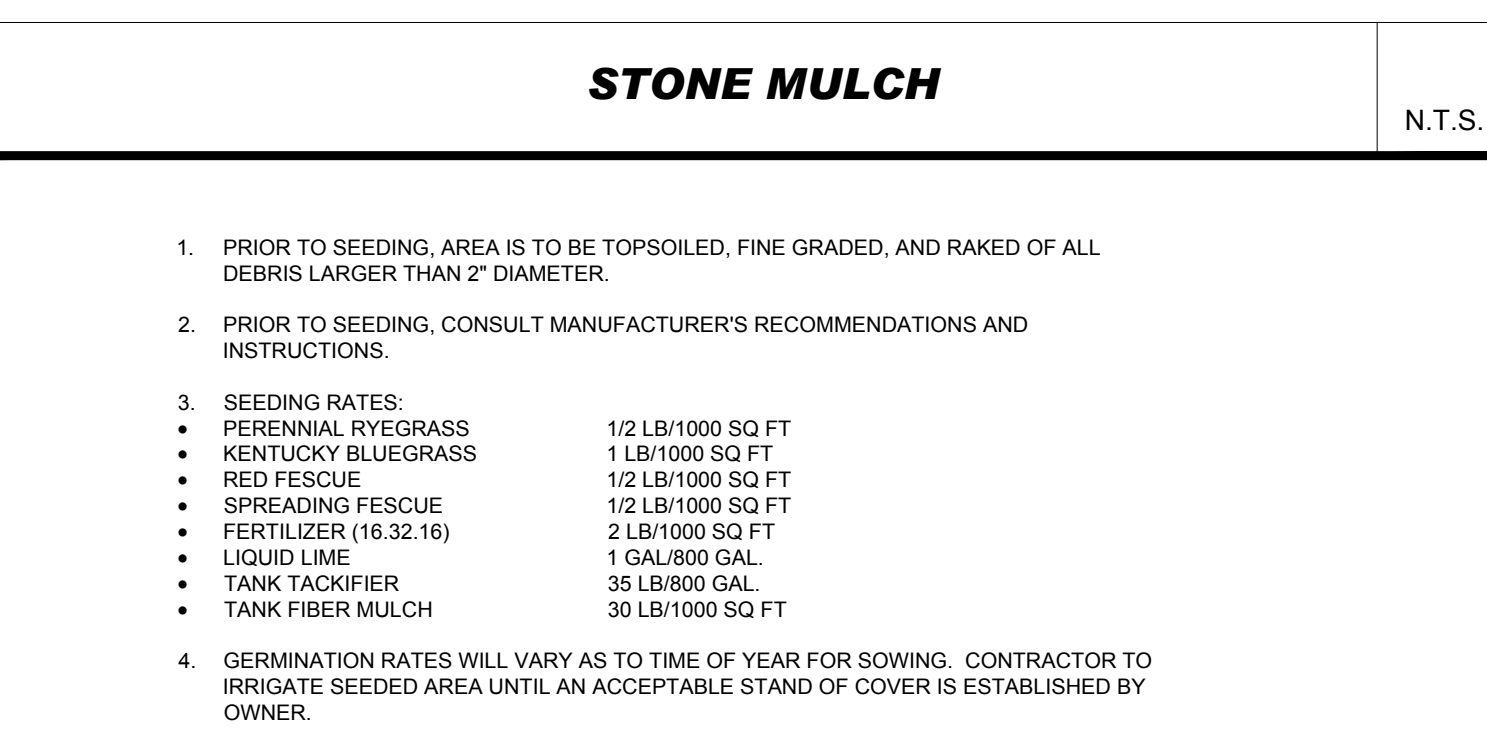
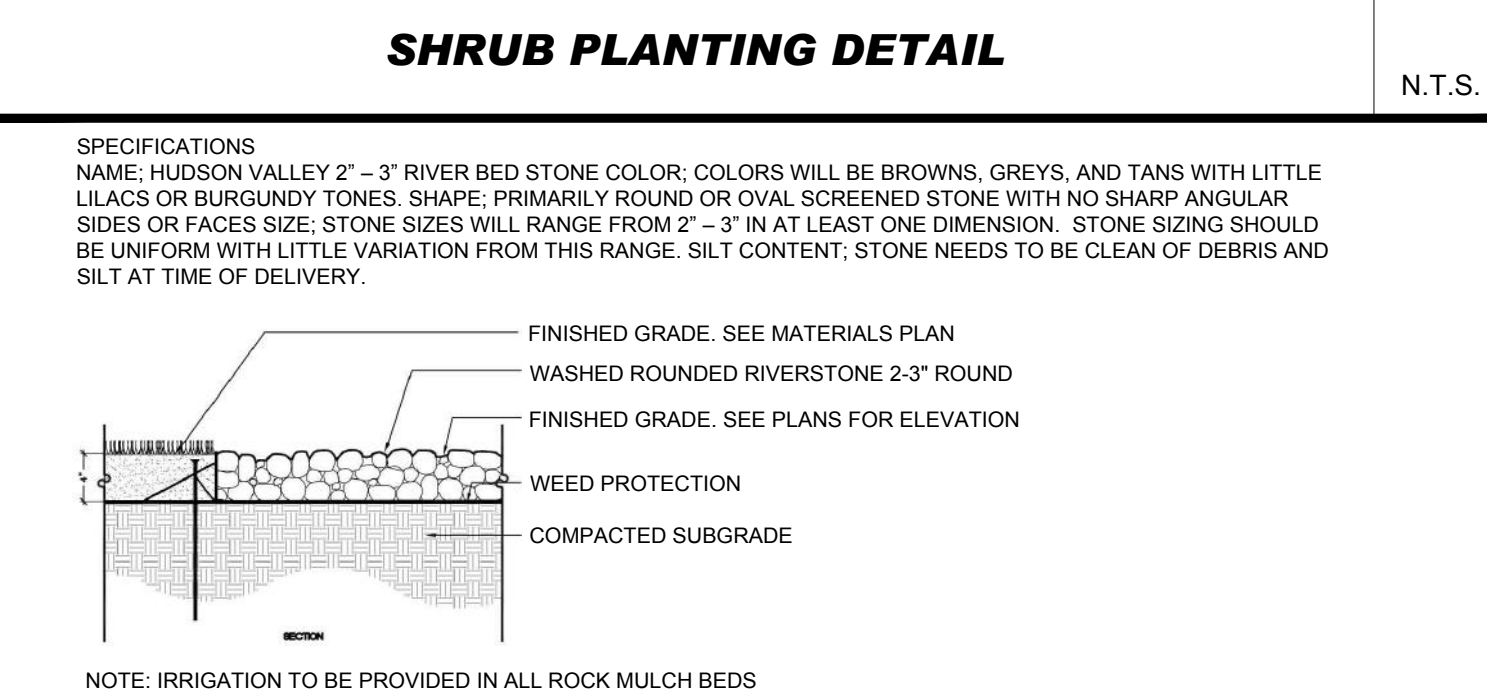
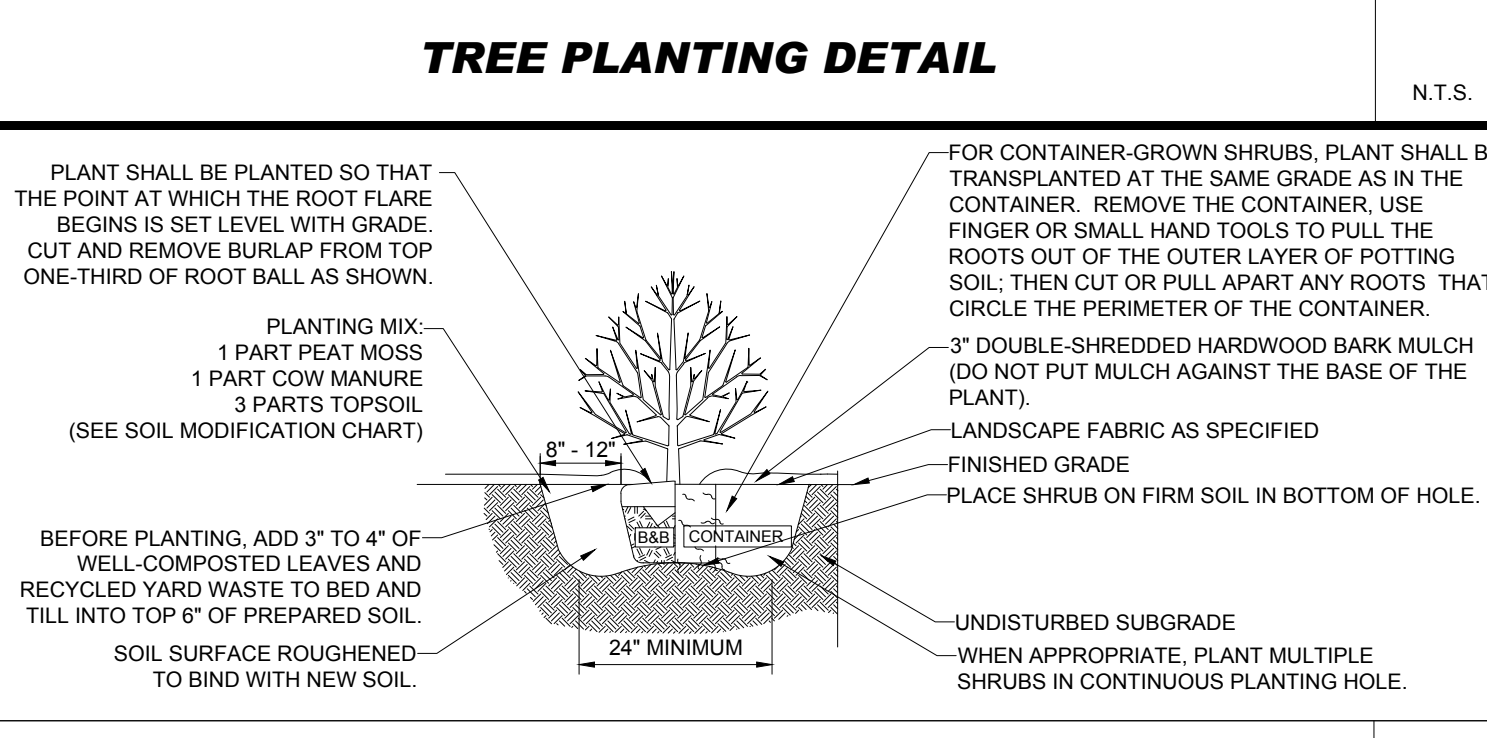
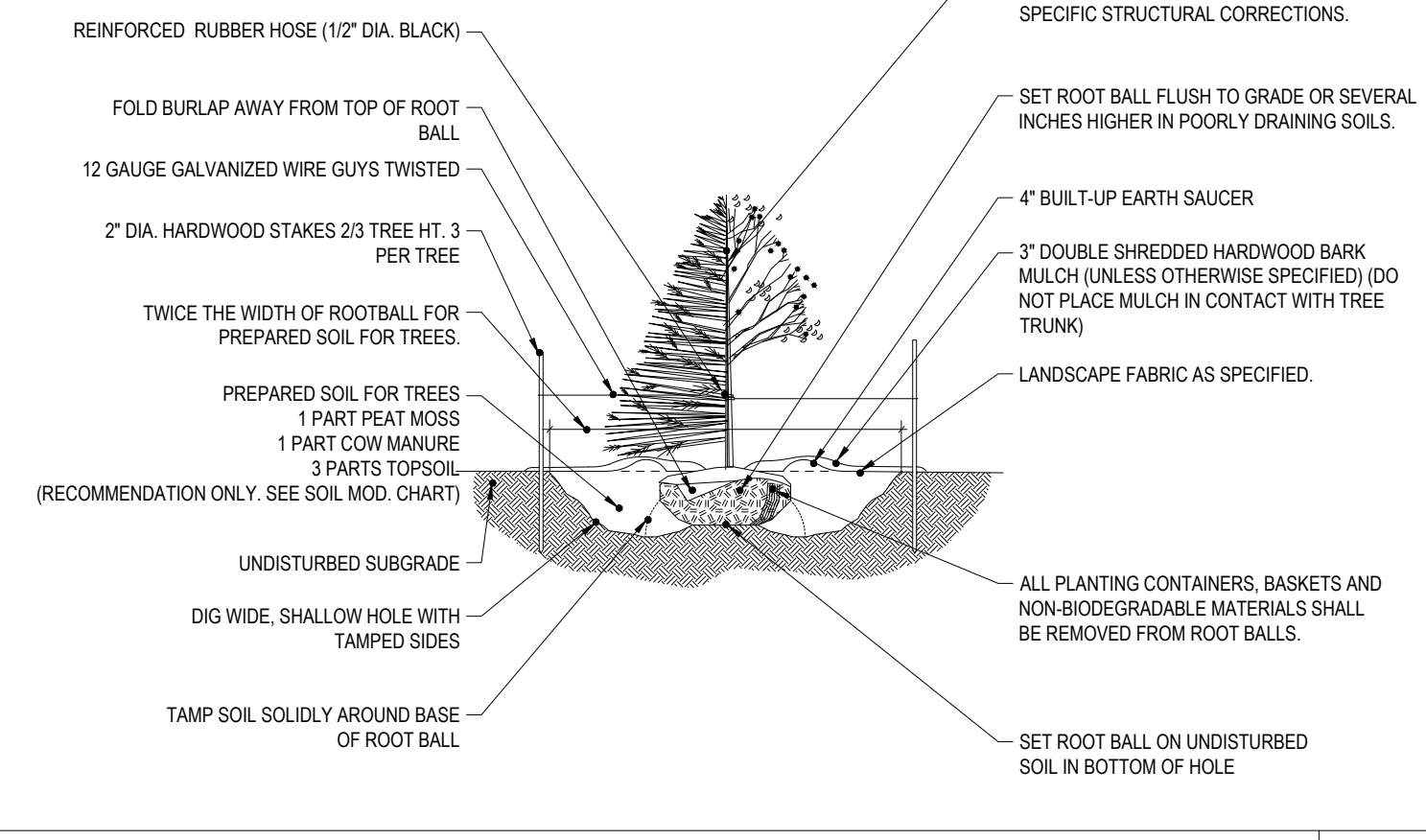
- ANY INJURED ROOTS OR BRANCHES SHALL BE PRUNED TO MAKE CLEAN-CUT ENDS PRIOR TO PLANTING UTILIZING CLEAN, SHARP TOOLS. ONLY INJURED OR DISEASED BRANCHING SHALL BE REMOVED.
- ALL PLANTING CONTAINERS, BASKETS AND NON-BIODEGRADABLE MATERIALS SHALL BE REMOVED FROM ROOT BALLS DURING PLANTING. NATURAL FIBER BURLAP MUST BE CUT FROM AROUND THE TRUNK OF THE TREE AND FOLDED DOWN AGAINST THE ROOT BALL PRIOR TO BACKFILLING.
- POSITION TREES AND SHRUBS AT THEIR INTENDED LOCATIONS AS PER THE PLANS AND SECURE THE APPROVAL OF THE LANDSCAPE ARCHITECT PRIOR TO EXCAVATING PITS, MAKING NECESSARY ADJUSTMENTS AS DIRECTED.
- PRIOR TO THE ISSUANCE OF ANY CERTIFICATE OF OCCUPANCY, THE PROPOSED LANDSCAPE, AS SHOWN ON THE APPROVED LANDSCAPE PLAN, MUST BE INSTALLED, INSPECTED AND APPROVED BY THE APPROVING AGENCY. THE APPROVING AGENCY SHALL TAKE INTO ACCOUNT SEASONAL CONSIDERATIONS IN THIS REGARD AS FOLLOWS. THE PLANTING OF TREES, SHRUBS, VINES OR GROUND COVER SHALL OCCUR ONLY DURING THE FOLLOWING PLANTING SEASONS:
  - PLANTS: MARCH 15 TO DECEMBER 15
  - LAWN: MARCH 15 TO JUNE 15 OR SEPT. 1 TO DECEMBER 1
- PLANTINGS REQUIRED FOR A CERTIFICATE OF OCCUPANCY SHALL BE PROVIDED DURING THE NEXT APPROPRIATE SEASON AT THE MUNICIPALITY'S DISCRETION. CONTRACTOR SHOULD CONTACT APPROVING AGENCY FOR POTENTIAL SUBSTITUTIONS.
- FURTHERMORE, THE FOLLOWING TREE VARIETIES ARE UNUSUALLY SUSCEPTIBLE TO WINTER DAMAGE. WITH TRANSPLANT SHOCK AND THE SEASONAL LACK OF NITROGEN AVAILABILITY, THE RISK OF PLANT DEATH IS GREATLY INCREASED. IT IS NOT RECOMMENDED THAT THESE SPECIES BE PLANTED DURING THE FALL PLANTING SEASON:
 

|                         |                       |
|-------------------------|-----------------------|
| ACER RUBRUM             | PLATANUS X ACERIFOLIA |
| BETULA VARIETIES        | POPULUS VARIETIES     |
| CARPINUS VARIETIES      | PRUNUS VARIETIES      |
| CRATAEGUS VARIETIES     | PYRUS VARIETIES       |
| KOELREUTERIA            | QUERCUS VARIETIES     |
| LIQUIDAMBAR STRACIFLUA  | TILIA TOMENTOSA       |
| LIRIODENDRON TULIPEFERA | ZELKOVA VARIETIES     |
- PLANTING PITS SHALL BE DUG WITH LEVEL BOTTOMS, WITH THE WIDTH TWICE THE DIAMETER OF ROOT BALL. THE ROOT BALL SHALL REST ON UNDISTURBED GRADE. EACH PLANT PIT SHALL BE BACKFILLED IN LAYERS WITH THE FOLLOWING PREPARED SOIL MIXED THOROUGHLY:
  - 1 PART PEAT MOSS
  - 1 PART COMPOSTED COW MANURE BY VOLUME
  - 3 PARTS TOPSOIL BY VOLUME
  - 21 GRAMS 'AGRIFORM' PLANTING TABLETS (OR APPROVED EQUAL) AS FOLLOWS:
    - 2 TABLETS PER 1 GALLON PLANT
    - 3 TABLETS PER 5 GALLON PLANT
    - 4 TABLETS PER 15 GALLON PLANT
    - LARGER PLANTS: 2 TABLETS PER 1/2" CALIPER OF TRUNK
- FILL PREPARED SOIL AROUND BALL OF PLANT HALF-WAY AND INSERT PLANT TABLETS. COMPLETE BACKFILL AND WATER THOROUGHLY.
- ALL PLANTS SHALL BE PLANTED SO THAT THE TOP OF THE ROOT BALL IS TO BE PLACED AT WHICH THE ROOT FLARE BEGINS, IS SET AT GROUND LEVEL AND IN THE CENTER OF THE PIT. NO SOIL IS TO BE PLACED DIRECTLY ON TOP OF THE ROOT BALL.
- ALL PROPOSED TREES DIRECTLY ADJACENT TO WALKWAYS OR DRIVEWAYS SHALL BE PRUNED AND MAINTAINED TO A MINIMUM BRANCHING HEIGHT OF 7' FROM GRADE.
- GROUND COVER AREAS SHALL RECEIVE A 1/2" LAYER OF HUMUS RAKED INTO THE TOP 1" OF PREPARED SOIL PRIOR TO PLANTING. ALL GROUND COVER AREAS SHALL BE WEEDED AND TREATED WITH A PRE-EMERGENT CHEMICAL AS PER MANUFACTURER'S RECOMMENDATION.
- NO PLANT, EXCEPT GROUND COVERS, GRASSES OR VINES, SHALL BE PLANTED LESS THAN TWO FEET (2') FROM EXISTING STRUCTURES AND SIDEWALKS.
- ALL PLANTING AREAS AND PLANTING PITS SHALL BE MULCHED AS SPECIFIED HEREIN TO FILL THE ENTIRE BED AREA OR SAUCER. NO MULCH IS TO TOUCH THE TRUNK OF THE TREE OR SHRUB.
- ALL PLANTING AREAS SHALL BE WATERED IMMEDIATELY UPON INSTALLATION IN ACCORDANCE WITH THE WATERING SPECIFICATIONS AS LISTED HEREIN.

- TRANSPLANTING (WHEN REQUIRED)**
  - ALL TRANSPLANTS SHALL BE DUG WITH INTACT ROOT BALLS CAPABLE OF SUSTAINING THE PLANT.
  - IF PLANTS ARE TO BE STOCKPILED BEFORE PLANTING, THEY SHALL BE HEALED IN WITH MULCH OR SOIL, ADEQUATELY WATERED AND PROTECTED FROM EXTREME HEAT, SUN AND WIND.
  - PLANTS SHALL NOT BE DUG FOR TRANSPLANTING BETWEEN APRIL 10 AND JUNE 30.
  - UPON REPLANTING, BACKFILL SOIL SHALL BE AMENDED WITH FERTILIZER AND ROOT GROWTH HORMONE.
  - TRANSPLANTS SHALL BE GUARANTEED FOR THE LENGTH OF THE GUARANTEE PERIOD SPECIFIED HEREIN.
  - TRANSPLANTS DUE, SHRUBS AND TREES LESS THAN SIX INCHES (6") DBH SHALL BE REPLACED IN KIND. TREES GREATER THAN SIX INCHES (6") DBH MAY BE REQUIRED TO BE REPLACED IN ACCORDANCE WITH THE MUNICIPALITY'S TREE REPLACEMENT GUIDELINES.
- WATERING**
  - NEW PLANTINGS OR LAWN AREAS SHALL BE ADEQUATELY IRRIGATED BEGINNING IMMEDIATELY AFTER PLANTING. WATER SHALL BE APPLIED TO EACH TREE AND SHRUB IN SUCH MANNER AS NOT TO DISTURB BACKFILL AND TO THE EXTENT THAT ALL MATERIALS IN THE PLANTING HOLE ARE THOROUGHLY SATURATED. WATERING SHALL CONTINUE AT LEAST UNTIL PLANTS ARE ESTABLISHED.
  - SITE OWNER SHALL PROVIDE WATER IF AVAILABLE ON SITE AT TIME OF PLANTING. IF WATER IS NOT AVAILABLE ON SITE, CONTRACTOR SHALL SUPPLY ALL NECESSARY WATER. THE USE OF WATERING BAGS IS RECOMMENDED FOR ALL NEWLY PLANTED TREES.
  - IF AN IRRIGATION SYSTEM HAS BEEN INSTALLED ON THE SITE, IT SHALL BE USED TO WATER PROPOSED PLANT MATERIAL, BUT ANY FAILURE OF THE SYSTEM DOES NOT ELIMINATE THE CONTRACTOR'S RESPONSIBILITY OF MAINTAINING THE DESIRED MOISTURE LEVEL FOR VIGOROUS, HEALTHY GROWTH.
- GUARANTEE**
  - THE LANDSCAPE CONTRACTOR SHALL GUARANTEE ALL PLANTS FOR A PERIOD OF 1 YEAR FROM APPROVAL OF LANDSCAPE INSTALLATION BY THE APPROVING AGENCY. CONTRACTOR SHALL SUPPLY THE OWNER WITH A MAINTENANCE BOND FOR TEN PERCENT (10%) OF THE VALUE OF THE LANDSCAPE INSTALLATION WHICH WILL BE RELEASED AT THE CONCLUSION OF THE GUARANTEE PERIOD AND WHEN A FINAL INSPECTION HAS BEEN COMPLETED AND APPROVED BY THE OWNER OR AUTHORIZED REPRESENTATIVE.
  - ANY DEAD OR DYING PLANT MATERIAL SHALL BE REPLACED FOR THE LENGTH OF THE GUARANTEE PERIOD. REPLACEMENT OF PLANT MATERIAL SHALL BE CONDUCTED AT THE FIRST SUCCEEDING PLANTING SEASON. ANY DEBRIS SHALL BE DISPOSED OF OFF-SITE, WITHOUT EXCEPTION.
  - TREES AND SHRUBS SHALL BE MAINTAINED BY THE CONTRACTOR DURING CONSTRUCTION AND THROUGHOUT THE 90 DAY MAINTENANCE PERIOD AS SPECIFIED HEREIN. CULTIVATION, WEEDING, WATERING AND THE PREVENTATIVE TREATMENTS SHALL BE PERFORMED AS NECESSARY TO KEEP PLANT MATERIAL IN GOOD CONDITION AND FREE OF INSECTS AND DISEASE.
  - LAWNS SHALL BE MAINTAINED THROUGH WATERING, FERTILIZING, WEEDING, MOVING, TRIMMING AND OTHER OPERATIONS SUCH AS ROLLING, REGARDING AND REPLANTING AS REQUIRED TO ESTABLISH A SMOOTH, ACCEPTABLE LAWN, FREE OF ERODED OR BARE AREAS.
- CLEANUP**
  - UPON THE COMPLETION OF ALL LANDSCAPE INSTALLATION AND BEFORE THE FINAL ACCEPTANCE, THE CONTRACTOR SHALL REMOVE ALL UNUSED MATERIALS, EQUIPMENT AND DEBRIS FROM THE SITE. ALL PAVED AREAS ARE TO BE CLEANED.
  - THE SITE SHALL BE CLEANED AND LEFT IN A NEAT AND ACCEPTABLE CONDITION AS APPROVED BY THE OWNER OR AUTHORIZED REPRESENTATIVE.
  - MAINTENANCE (ALTERNATIVE BID):
    - A 90 DAY MAINTENANCE PERIOD SHALL COMMENCE AT THE END OF ALL LANDSCAPE INSTALLATION OPERATIONS. THE 90 DAY MAINTENANCE PERIOD ENSURES TO THE OWNER/OPERATOR THAT THE NEWLY INSTALLED LANDSCAPING HAS BEEN MAINTAINED AS SPECIFIED ON THE APPROVED LANDSCAPE PLAN. ONCE THE INITIAL 90 DAY MAINTENANCE PERIOD HAS EXPIRED, THE OWNER/OPERATOR MAY REQUEST THAT BIDDERS SUBMIT AN ALTERNATE MAINTENANCE BID FOR A MONTHLY MAINTENANCE CONTRACT. THE ALTERNATE MAINTENANCE CONTRACT WILL ENCOMPASS ANY WORK THAT IS CONSIDERED APPROPRIATE TO ENSURE THAT PLANT AND LAWN AREAS ARE HEALTHY AND MANICURED TO THE APPROVAL OF THE OWNER/OPERATOR.



- NOTES:
- NO SOIL OR MULCH SHALL BE PLACED AGAINST ROOT COLLAR OF PLANT.
  - REMOVE ALL NON-BIODEGRADABLE MATERIAL AND ROPE FROM TRUNK & TOP OF ROOT BALL. FOLD BURLAP BACK 13" FROM ROOT BALL.
  - PLANTING DEPTH SHALL BE THE SAME AS GROWN IN NURSERY.
  - THOROUGHLY SOAK THE TREE ROOT BALL AND ADJACENT PREPARED SOIL SEVERAL TIMES DURING THE FIRST MONTH AFTER PLANTING AND REGULARLY THROUGHOUT THE FOLLOWING TWO SUMMERS.
  - THE BOTTOM OF PLANTING PIT EXCAVATIONS SHOULD BE ROUGH TO AVOID MATTING OF SOIL LAYERS AS NEW SOIL IS ADDED. IT IS PREFERABLE TO TILL THE FIRST LIFT (2 TO 3 IN.) OF PLANTING SOIL INTO THE SUBSOIL.
  - REFER TO THE CHART "GENERAL RANGE OF SOIL MODIFICATIONS & VOLUMES FOR VARIOUS SOIL CONDITIONS" TO DETERMINE MINIMUM WIDTH OF PREPARED SOIL.
  - SUBSTITUTE ARBORVITAE STAKING SYSTEM WHEN SPECIFIED.



**BOHLER**  
SITE CIVIL AND CONSULTING ENGINEERING  
PROGRAM MANAGEMENT  
LANDSCAPE ARCHITECTURE  
SUSTAINABLE DESIGN  
PERMITTING SERVICES  
TRANSPORTATION SERVICES

**REVISIONS**

| REV | DATE       | COMMENT           | DRAWN BY |
|-----|------------|-------------------|----------|
| 1   | 04/03/2023 | PER TOWN COMMENTS | JJ<br>JF |

**811**  
Know what's below.  
Call before you dig.  
ALWAYS CALL 811  
It's fast. It's free. It's the law.

**PERMIT SET**

THIS DRAWING IS INTENDED FOR MUNICIPAL AND/OR AGENCY REVIEW AND APPROVAL. IT IS NOT INTENDED AS A CONSTRUCTION DOCUMENT UNLESS INDICATED OTHERWISE.

PROJECT No.: MA220275.00  
DRAWN BY: CDF/JR  
CHECKED BY: JF/RMM  
DATE: 04/03/23  
DATE ID: MA220275.00-LSCP-04

PROJECT:  
**PROPOSED SITE PLAN DOCUMENTS**

FOR

**CHASE**

PROPOSED BANK DEVELOPMENT  
MAP: 17 LOT: 63  
431 MAIN STREET,  
TOWN OF READING,  
MIDDLESEX COUNTY,  
MASSACHUSETTS

**BOHLER**  
352 TURNPIKE ROAD  
SOUTHBOROUGH, MA 01772  
Phone: (508) 480-9900  
www.BohlerEngineering.com

SHEET TITLE:  
**LANDSCAPE NOTES & DETAILS**

SHEET NUMBER:  
**C-702**

REVISION 1 - 04/03/2023

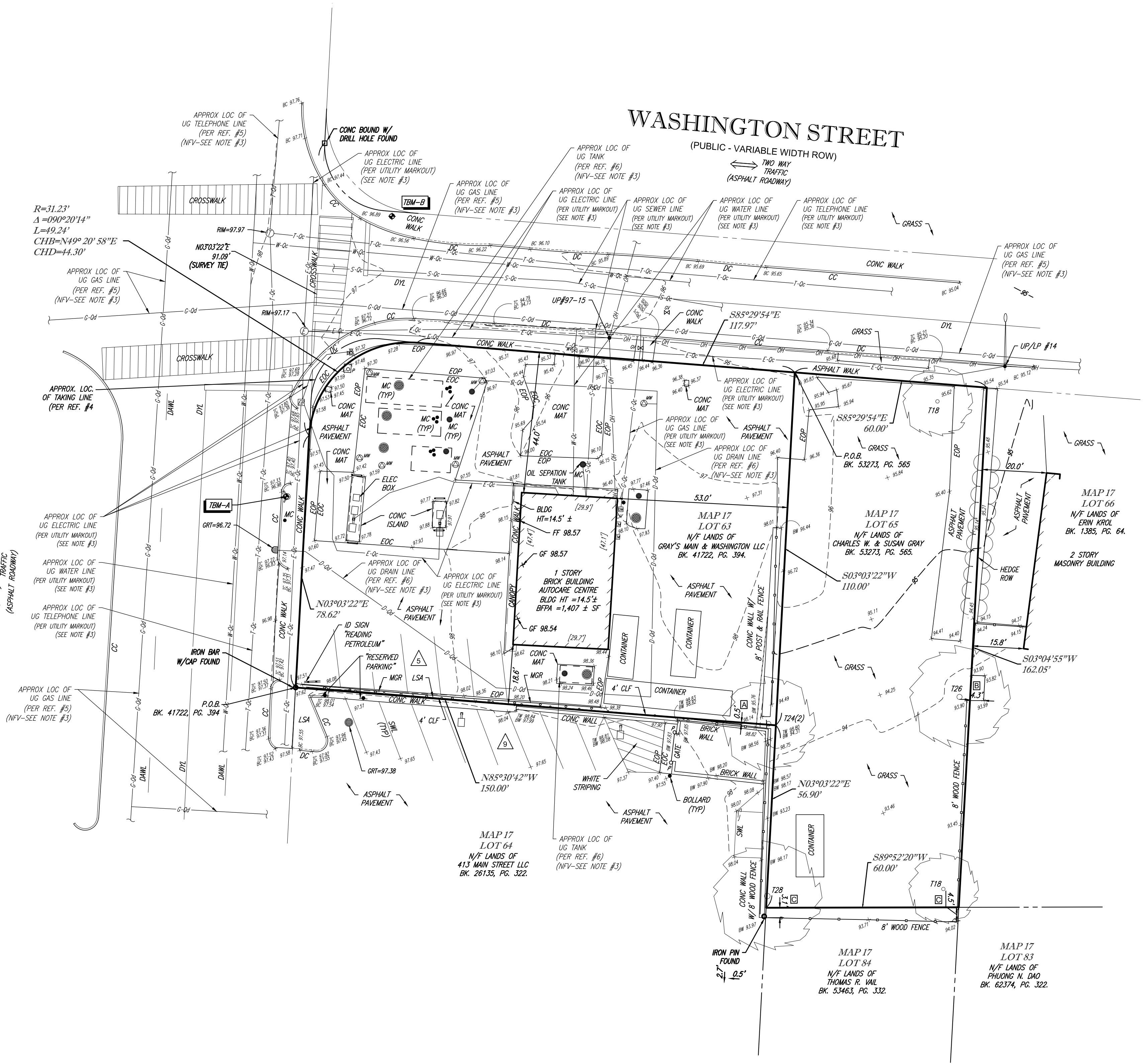
P:\0222\MA220275\04\03\CD\DRAWINGS\PLAN SET\REVISED SITE PLAN\MA220275-00-LSCP-04.dwg - LAUJFC - 07/21/2023



LEGEND

- 124 --- EXISTING CONTOUR
- 125 EXISTING SPOT ELEVATION
- X 121.45 EXISTING TOP OF CURB ELEVATION
- X BC 121.45 EXISTING BOTTOM OF CURB ELEVATION
- X TW 121.45 EXISTING TOP OF WALL ELEVATION
- X BM 122.85 EXISTING BOTTOM OF WALL ELEVATION
- X FF 121.45 EXISTING FINISHED FLOOR ELEVATION
- OH OVERHEAD WIRES
- G APPROX. LOC. UNDERGROUND GAS LINE
- E APPROX. LOC. UNDERGROUND ELECTRIC LINE
- D APPROX. LOC. UNDERGROUND DRAINAGE LINE
- S APPROX. LOC. UNDERGROUND SANITARY / SEWER LINE
- T APPROX. LOC. UNDERGROUND TELEPHONE LINE
- W APPROX. LOC. UNDERGROUND WATER LINE
- GV GAS VALVE
- GM GAS METER
- EM ELECTRIC METER
- HYDRANT
- UP F UTILITY POLE
- GW GUY WIRE
- SL STREET LIGHT
- TS TRAFFIC SIGNAL
- MW MONITORING WELL
- AL AREA LIGHT
- SIGN
- BOLLARD
- U-BOLLARD
- MGR METAL GUIDE RAIL
- POST
- TMH TELEPHONE MANHOLE
- EMH ELECTRIC MANHOLE
- PC PARKING SPACE COUNT
- TREE & TRUNK SIZE
- EVIDENCE FOUND
- UNKNOWN TERMINUS
- DYL DOUBLE YELLOW LINE
- HT HEIGHT
- DAML DASHED WHITE LINE
- BLDG BUILDING
- BFFA BUILDING FOOTPRINT AREA
- UC UNDER GROUND
- CLF CHAIN LINK FENCE
- DC DEPRESSED CURB
- EOP EDGE OF CONCRETE
- EOP EDGE OF PAVEMENT
- LSA LANDSCAPED AREA
- MC METAL COVER
- (TYP) TYPICAL
- GRT GRATE ELEVATION
- BOT BOTTOM ELEVATION
- LO' OFFSET OF STRUCTURE AT GROUND LEVEL RELATIVE TO PROPERTY LINE
- EL ELEVATION
- SWL SOLID WHITE LINE
- TBM TEMPORARY BENCH MARK
- CC CONCRETE CURB
- C- SUBSURFACE UTILITY QUALITY LEVEL C
- D- SUBSURFACE UTILITY QUALITY LEVEL D

**MAIN STREET**  
(AKA ROUTE 28)  
(PUBLIC - VARIABLE WIDTH ROW)  
(PER REF. #3)  
(ASPHALT ROADWAY)



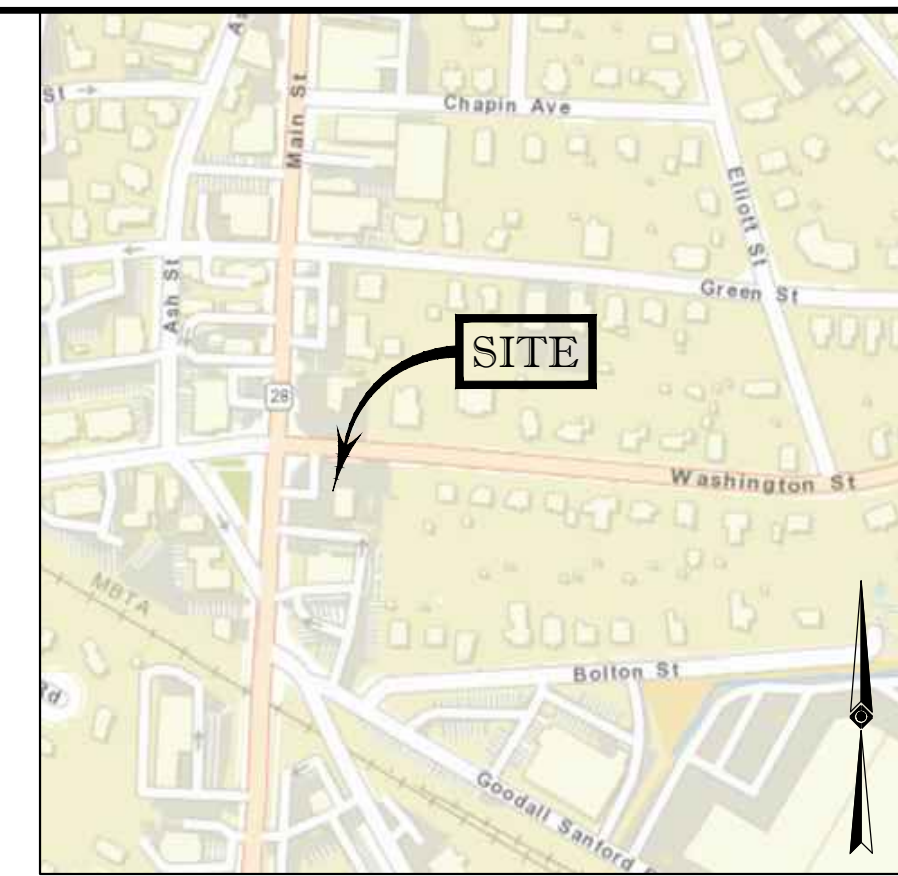
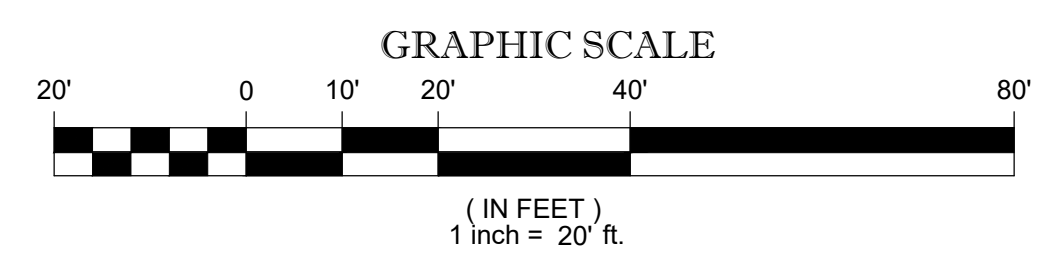
- NOTES:**
- PROPERTY KNOWN AS LOT 63 AS SHOWN ON THE TOWN OF READING, MIDDLESEX COUNTY, COMMONWEALTH OF MASSACHUSETTS, MAP NO. 17.
  - AREA: LOT 63 = 16,276 SQUARE FEET OR 0.374 ACRES  
LOT 65 = 9,860 SQUARE FEET OR 0.226 ACRES
  - LOCATION OF UNDERGROUND UTILITIES ARE APPROXIMATE. LOCATIONS AND SIZES ARE BASED ON UTILITY MARK-OUTS, ABOVE GROUND STRUCTURES THAT WERE VISIBLE & ACCESSIBLE IN THE FIELD, AND THE MAPS AS LISTED IN THE REFERENCES AVAILABLE AT THE TIME OF THE SURVEY. AVAILABLE AS-BUILT PLANS AND UTILITY MARKOUT DOES NOT ENSURE MAPPING OF ALL UNDERGROUND UTILITIES AND STRUCTURES. BEFORE ANY EXCAVATION IS TO BEGIN, ALL UNDERGROUND UTILITIES SHOULD BE VERIFIED AS TO THEIR LOCATION, SIZE AND TYPE BY THE PROPER UTILITY COMPANIES. CONTROL POINT ASSOCIATES, INC. DOES NOT GUARANTEE THE UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA EITHER IN SERVICE OR ABANDONED.
- THE SOURCE OF UNDERGROUND UTILITIES ARE SHOWN UTILIZING A QUALITY LEVEL SYSTEM:
- QUALITY LEVEL D - UTILITIES SHOWN BASED UPON REFERENCE MAPPING OR ORAL HISTORY. NOT FIELD VERIFIED.
  - QUALITY LEVEL C - LOCATION OF UTILITY SURFACE FEATURES SUPPLEMENTS REFERENCE MAPPING. INCLUDES MARKOUT BY OTHERS.
  - QUALITY LEVEL B - UTILITY LOCATION DATA IS COLLECTED THROUGH GEOPHYSICAL SENSING TECHNOLOGY TO SUPPLEMENT SURFACE FEATURES AND/OR REFERENCE MAPPING. INCLUDES MARKOUT BY CONTROL POINT ASSOCIATES, INC.
  - QUALITY LEVEL A - HORIZONTAL AND VERTICAL LOCATION OF UTILITIES ARE OBTAINED USING VACUUM EQUIPMENT EXCAVATION OR OTHER METHODS TO EXPOSE THE UTILITY. LOCATION SHOWN AT SINGLE POINT WHERE EXCAVATION OCCURRED UNLESS UTILITY WAS LOCATED PRIOR TO FILLING.
- ALL FOUR TYPES MAY NOT BE PRESENT ON THIS EXCAVATION.
- THIS PLAN IS BASED ON INFORMATION PROVIDED BY CLIENT, A SURVEY PREPARED IN THE FIELD BY CONTROL POINT ASSOCIATES, INC., AND OTHER REFERENCE MATERIAL AS LISTED HEREON.
  - THIS SURVEY WAS PREPARED WITHOUT THE BENEFIT OF A TITLE REPORT AND IS SUBJECT TO THE RESTRICTIONS, COVENANTS AND/OR EASEMENTS THAT MAY BE CONTAINED THEREIN. IT IS STRONGLY RECOMMENDED THAT A COMPLETE TITLE SEARCH BE PROVIDED TO THE SURVEYOR FOR REVIEW PRIOR TO THE PLACEMENT OF OR ALTERATION TO IMPROVEMENTS TO THE PROPERTY.
  - BY GRAPHIC PLOTTING ONLY PROPERTY IS PARTIALLY LOCATED IN FLOOD HAZARD ZONE X UNSHADED (AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN) PER REF. # 2.
  - THE EXISTENCE OF UNDERGROUND STORAGE TANKS, IF ANY, WAS NOT KNOWN AT THE TIME OF THE FIELD SURVEY.
  - ELEVATIONS REFER TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88), BASED ON GPS OBSERVATIONS UTILIZING THE KEYSTONE VRS NETWORK (KEYNETGPS).  
TEMPORARY BENCH MARKS SET:  
TBM-A: X-CUT IN BOLT OVER MAIN OUTLET OF FIRE HYDRANT. ELEVATION = 99.50'  
TBM-B: MAG NAIL SET IN CONCRETE SIDEWALK. ELEVATION = 97.41'
- PRIOR TO CONSTRUCTION IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THAT THE BENCHMARKS ILLUSTRATED ON THIS SKETCH HAVE NOT BEEN DISTURBED AND THEIR ELEVATIONS HAVE BEEN CONFIRMED. ANY CONFLICTS MUST BE REPORTED PRIOR TO CONSTRUCTION.
- THE OFFSETS SHOWN ARE NOT TO BE USED FOR THE CONSTRUCTION OF ANY STRUCTURE, FENCE, PERMANENT ADDITION, ETC.

- REFERENCES:**
- THE TAX ASSESSOR'S MAP OF TOWN OF READING, MIDDLESEX COUNTY, MAP 17.
  - MAP ENTITLED "NATIONAL FLOOD INSURANCE PROGRAM, FIRM, FLOOD INSURANCE RATE MAP, MASSACHUSETTS (ALL JURISDICTIONS), MIDDLESEX COUNTY, PANEL 313 OF 656," MAP NUMBER 25017C0313E, EFFECTIVE DATE, JUNE 4, 2010.
  - MAP ENTITLED "PROPOSED PLOT PLAN 431 MAIN STREET READING, MASSACHUSETTS," PREPARED BY LECLAN SURVEY ASSOCIATES, INC., DATED MAY 14, 2013.
  - MAP ENTITLED "PLAN OF LAND IN READING, MASSACHUSETTS LAND TAKING FOR ROADWAY CONSTRUCTION," PREPARED BY READING DEPARTMENT OF PUBLIC WORKS, ENGINEERING DIVISION, DATED DECEMBER 1, 1993. RECORDED IN MIDDLESEX COUNTY REGISTRY OF DEEDS AS PLAN No. 333 OF 1994.
  - GAS MAPPING PROVIDED BY NATIONAL GRID.
  - MAP ENTITLED "MOBIL OIL CORPORATION READING, MASSACHUSETTS, SITE PLAN SHOWING LAYOUT OF PROPOSED REMEDIAL SYSTEM," PREPARED BY HYDRO-ENVIRONMENTAL TECHNOLOGIES, INC., DATED OCTOBER 31, 1990.

**TABLE OF APPARENT ENCROACHMENTS**

|   |   |
|---|---|
| A | 4' CHAIN LINK FENCE FROM LOT 63 OVER PROP LINE ONTO LOT 64 BY 0.5'    |
| B | 8' WOODEN FENCE FROM LOT 65 OVER PROP LINE ONTO 66 BY 4.3'            |
| C | 8' WOODEN FENCE FROM LOT 65 OVER PROP LINE ONTO LOT 84 BY 3.1' - 4.5' |

NOTE: THESE ARE THE POSSIBLE ENCROACHMENTS OBSERVED DURING THE FIELD SURVEY. THERE MAY BE OTHERS NOT RECOGNIZED BY THE SURVEYOR.



MASSACHUSETTS STATE PLANE COORDINATE SYSTEM - (NAD 83)

CONTROL POINT ASSOCIATES, INC. - ALL RIGHTS RESERVED. ORIGINAL PRODUCT OR SERVICE PROVIDED BY CONTROL POINT ASSOCIATES, INC. IS PROHIBITED.

THIS SURVEY HAS BEEN PERFORMED IN THE FIELD UNDER MY SUPERVISION, AND TO THE BEST OF MY KNOWLEDGE, BELIEF, AND INFORMATION, THIS SURVEY HAS BEEN PERFORMED IN ACCORDANCE WITH CURRENTLY ACCEPTED ACCURACY STANDARDS.

NOT A VALID ORIGINAL DOCUMENT UNLESS EMBOSSED WITH RAISED IMPRESSION OR STAMPED WITH A BLUE INK SEAL

**GERRY L. HOLDRIGHT, PLS**  
MASSACHUSETTS PROFESSIONAL LAND SURVEYOR #49211

|                |           |   |          |              |          |
|----------------|-----------|---|----------|--------------|----------|
| FIELD DATE     | 8-16-2022 | <b>BOUNDARY, TOPOGRAPHIC &amp; UTILITY SURVEY</b> |          |              |          |
| FIELD BOOK NO. | 22-09 MA  | <b>431 MAIN STREET</b>                            |          |              |          |
| FIELD BOOK PG. | 105       | MAP 17, LOTS 63 & 65                              |          |              |          |
| FIELD CREW     | B.S.B.    | TOWN OF READING                                   |          |              |          |
| DRAWN:         | R.A.      | MIDDLESEX COUNTY                                  |          |              |          |
| REVIEWED:      | R.J.K.    | COMMONWEALTH OF MASSACHUSETTS                     |          |              |          |
| DATE           | 9-15-2022 | ALBANY, NY 518-217-5010                           | FILE NO. | 03-220325-00 | DWG. NO. |
| APPROVED:      | G.L.H.    | HAUPPAUGE, NY 631-880-2645                        | SCALE    | 1"=20'       | 1 OF 1   |
|                |           | MANHATTAN, NY 646-780-0411                        |          |              |          |
|                |           | SOUTH BOKROUGH, MA 01772                          |          |              |          |
|                |           | 508.948.5000 - 508.948.3003 FAX                   |          |              |          |
|                |           | WARREN, NJ 908-692-2999                           |          |              |          |

THE COMMONWEALTH OF MASSACHUSETTS REQUIRES NOTIFICATION BY EXCAVATORS, DESIGNERS, OR ANY PERSON PREPARING TO DISTURB THE EARTH'S SURFACE ANYWHERE IN THE COMMONWEALTH.



# Traffic Impact Study

## Proposed Bank

431 Main Street (Route 28)  
Reading, MA

# TABLE OF CONTENTS

|   |           |
|---|-----------|
| <b>INTRODUCTION.....</b>                              | <b>1</b>  |
| <i>PROJECT DESCRIPTION.....</i>                       | <i>1</i>  |
| <i>STUDY METHODOLOGY.....</i>                         | <i>3</i>  |
| <i>STUDY AREA INTERSECTIONS .....</i>                 | <i>3</i>  |
| <b>EXISTING CONDITIONS .....</b>                      | <b>4</b>  |
| <i>ROADWAY NETWORK.....</i>                           | <i>4</i>  |
| <i>EXISTING TRAFFIC VOLUMES.....</i>                  | <i>4</i>  |
| <i>CRASH SUMMARY .....</i>                            | <i>8</i>  |
| <b>FUTURE CONDITIONS .....</b>                        | <b>9</b>  |
| <i>FUTURE ROADWAY IMPROVEMENTS .....</i>              | <i>9</i>  |
| <i>BACKGROUND TRAFFIC GROWTH.....</i>                 | <i>9</i>  |
| <i>2030 No BUILD TRAFFIC VOLUMES.....</i>             | <i>10</i> |
| <i>SITE-GENERATED TRAFFIC.....</i>                    | <i>13</i> |
| <i>PROJECT TRIP DISTRIBUTION AND ASSIGNMENT .....</i> | <i>14</i> |
| <i>2030 BUILD TRAFFIC VOLUMES .....</i>               | <i>14</i> |
| <b>TRAFFIC OPERATIONS ANALYSIS.....</b>               | <b>20</b> |
| <i>LEVEL-OF-SERVICE CRITERIA.....</i>                 | <i>20</i> |
| <i>CAPACITY ANALYSIS RESULTS .....</i>                | <i>20</i> |
| <i>SITE ACCESS AND CIRCULATION .....</i>              | <i>22</i> |
| <i>SIGHT DISTANCE .....</i>                           | <i>22</i> |
| <b>CONCLUSION .....</b>                               | <b>24</b> |



## LIST OF TABLES

|  |    |
|--|----|
| Table 1: Existing Gas Station Volume Summary .....             | 5  |
| Table 2: Existing Traffic Volume Summary .....                 | 5  |
| Table 3: Estimated Project Trips.....                          | 13 |
| Table 4: Weekday Morning Intersection Capacity Analysis.....   | 21 |
| Table 5: Weekday Afternoon Intersection Capacity Analysis..... | 21 |
| Table 6: Stopping Sight Distance Requirements .....            | 23 |
| Table 7: Intersection Sight Distance Requirements.....         | 23 |

## LIST OF FIGURES

|  |    |
|--|----|
| Figure 1: Site Location Map.....                                   | 2  |
| Figure 2: 2023 Existing Weekday AM Peak Hour Traffic Volumes ..... | 6  |
| Figure 3: 2023 Existing Weekday PM Peak Hour Traffic Volumes.....  | 7  |
| Figure 4: 2030 No Build AM Weekday Peak Hour Traffic Volumes ..... | 11 |
| Figure 5: 2030 No Build PM Weekday Peak Hour Traffic Volumes ..... | 12 |
| Figure 6: Arrival and Departure.....                               | 15 |
| Figure 7: Weekday AM Peak Hour New Project Trips .....             | 16 |
| Figure 8: Weekday PM Peak Hour New Project Trips .....             | 17 |
| Figure 9: 2030 Build Weekday AM Peak Hour Traffic Volumes.....     | 18 |
| Figure 10: 2030 Build Weekday PM Peak Hour Traffic Volumes .....   | 19 |

## LIST OF APPENDICES

|  |  |
|--|--|
| Appendix A: Traffic Count Data                               |  |
| Appendix B: MassDOT Seasonal Adjustment Data                 |  |
| Appendix C: Traffic Projection Model                         |  |
| Appendix D: Crash Summary                                    |  |
| Appendix E: Highway Capacity Manual Methodologies            |  |
| Appendix F: 2023 Existing Capacity/Level-of-Service Analysis |  |
| Appendix G: 2030 No Build Capacity/Level-of-Service Analysis |  |
| Appendix H: 2030 Build Capacity/Level-of-Service Analysis    |  |
| Appendix I: Capacity/Level-of-Service Analysis Summary       |  |

## **INTRODUCTION**

McMahon, a Bowman company has completed a traffic impact study for the proposed bank to be located at 431 Main Street (Route 28) in Reading, Massachusetts. This traffic impact study is based on the Site Layout Plan prepared by Bohler Engineering, dated November 8, 2022. The purpose of this traffic impact study is to evaluate existing and projected traffic operations and safety conditions associated with the proposed redevelopment within the study area.

The traffic impact study is based on a review of existing traffic volumes, recent crash data, and the anticipated traffic generating characteristics of the proposed project. The study examines existing and projected traffic operations (both with and without the proposed redevelopment) at key intersections in the vicinity of the project site. The study area was selected based on a review of the surrounding roadway network and anticipated trip generating characteristics of the proposed project. This study provides a detailed analysis of traffic operations during the weekday morning and weekday afternoon peak hours, when the combination of adjacent roadway volumes and project trips is expected to be the greatest.

Based on the analysis presented in this study, the proposed redevelopment is not expected to have a significant impact on the safety and operations of the area roadways and intersections. The following report documents these findings.

### ***Project Description***

The existing site consists of a one-story 1,407 square foot (sf) brick building that is presently occupied by a gas station and automobile service center. The proposed project would include the demolition of the existing structure and the construction of a new 3,293 sf bank facility. The project site is bounded by a commercial land use to the south, Washington Street to the north, residential land uses to the east and Main Street (Route 28) to the west. Access to the project site would be provided via an unsignalized right-in right-out driveway located on Main Street, approximately 115 feet south of the Washington Street intersection, and via an unsignalized right-in right-out driveway located on Washington Street, approximately 165 feet east of the Main Street intersection. The proposed project would provide a total of 15 parking spaces including one accessible space adjacent to the building for patrons.



Figure 1  
Site Location Map  
Proposed Bank  
Reading, MA



### ***Study Methodology***

This traffic impact study evaluates existing and projected traffic operations within the study area for the weekday morning and weekday afternoon peak hour traffic conditions, when the combination of the adjacent roadway volumes and estimated project trips would be expected to be the greatest.

The study was conducted in three steps. The first step consisted of an inventory of existing traffic conditions within the project study area. As part of this inventory, manual turning movement counts were collected in the vicinity of the project site during the weekday morning and weekday afternoon peak periods. A field visit was also completed to document intersection and roadway geometries. Crash data in the vicinity of the project site driveways was obtained from the Massachusetts Department of Transportation (MassDOT) to determine if the intersection of Main Street (Route 28) at Washington Street or the project site driveways have any existing traffic safety deficiencies.

The second step of the study builds upon the data collected in the first step to establish the basis for evaluating potential transportation impacts associated with the projected future conditions. During this second step, the projected traffic demands associated with any planned future developments that could influence traffic volumes at the study area intersections were assessed. Consistent with MassDOT traffic study guidelines, 2023 Existing traffic volumes were forecasted to the future year 2030 to establish 2030 No Build (without project) conditions and 2030 Build (with project) conditions.

The third step of this study determined if measures were necessary to improve existing or future traffic operations and safety, minimize potential traffic impacts, and provide safe and efficient access to the proposed project site.

### ***Study Area Intersections***

Based on a review of the anticipated traffic generating characteristics of the proposed project and a review of the adjacent roadways serving the project site, the following study area intersections were selected for analysis:

- Main Street (Route 28) at Washington Street (signalized);
- Main Street (Route 28) at Southern Project Site Driveway (unsignalized);
- Washington Street at Eastern Project Site Driveway (unsignalized).

The traffic impact study documents existing and future traffic conditions for the study area intersections noted above.

## **EXISTING CONDITIONS**

The existing conditions assessment included in this study consists of an inventory of intersection and roadway geometries, an inventory of traffic control devices, the collection of peak period traffic volumes, and a review of recent crash data. The existing conditions in the vicinity of the project site are summarized below.

### ***Roadway Network***

#### Main Street (Route 28)

Main Street (Route 28) generally extends in a north-south direction through the Town of Reading and is classified as a local roadway within the project area under Town of Reading jurisdiction. In the vicinity of the project site, Main Street (Route 28) provides access to commercial land uses and has two travel lanes in each direction, each measuring approximately 11 feet wide. No bicycle accommodations are provided. Sidewalks measuring five feet wide are provided on both sides of the roadway. Main Street (Route 28) has posted speed limits of 30 miles per hour (mph) in the vicinity of study area. A signalized railroad crossing is present approximately 280 feet south of the project site. The Massachusetts Bay Transportation Authority (MBTA) station on Lincoln Street provides service along this railroad for the Haverhill Line. According to the MBTA website, the Haverhill Line's current fall/winter schedule provides regular inbound service to Boston North Station beginning at 5:18 AM on weekdays and ending at 10:07 PM. Regular weekday outbound service from Boston North Station is provided from 6:28 AM to 11:28 PM. Weekend inbound and outbound schedules are reduced compared to the weekday service.

#### Washington Street

Washington Street generally extends in an east-west direction from Village Street to Woburn Street and is classified as a local roadway within the project area under Town of Reading jurisdiction. In the vicinity of the project site, Washington Street provides access to residential land uses and has one travel lane in each direction, with lanes in both directions measuring approximately 11 feet wide. Sidewalks measuring five feet wide are provided on both sides of the roadway. Washington Street has a posted speed limit of 25 mph in the eastbound direction and 30 mph in the westbound direction.

### ***Existing Traffic Volumes***

To assess peak hour traffic conditions, turning movement counts (TMCs) were conducted at the study area intersections during the weekday morning and weekday afternoon peak periods. A 24-hour automatic traffic recorder (ATR) count was also collected on Main Street (Route 28) south of the railroad crossing, in the vicinity of the project site.

TMCs were conducted on Wednesday, January 4, 2023, from 7:00 AM to 9:00 AM and 4:00 PM to 6:00 PM. The results of the turning movement counts are tabulated by 15-minute periods and are provided in Appendix A of this report. The four highest consecutive 15-minute intervals during each of these count periods constitute the peak hours that are the basis of the traffic analysis provided in this report. Based on a review of the peak period traffic data, the weekday morning peak hour occurs between 7:45 AM and 8:45 AM and the weekday afternoon peak hour occurs between 5:00 PM and 6:00 PM. The existing gas station trips obtained from the TMC's during the weekday morning and weekday afternoon peak hours are summarized below in Table 1.

**Table 1: Existing Gas Station Volume Summary**

| <b>Description</b> | <b>Weekday Morning<br/>Peak Hour</b> |            |              | <b>Weekday Afternoon<br/>Peak Hour</b> |            |              |
|--------------------|--------------------------------------|------------|--------------|--|------------|--------------|
|                    | <b>In</b>                            | <b>Out</b> | <b>Total</b> | <b>In</b>                              | <b>Out</b> | <b>Total</b> |
|                    | Existing Gas Station Trips           | 14         | 10           | 24                                     | 16         | 10           |

The 24-hour ATR count was conducted on Main Street (Route 28) south of the railroad crossing on Wednesday, January 4, 2023. The results of the ATR are provided in Appendix A of this report and are summarized in Table 2.

**Table 2: Existing Traffic Volume Summary**

| <b>Roadway</b>                | <b>Direction</b> | <b>ADT<sup>1</sup></b> | <b>AM Peak<br/>Hour<sup>2</sup></b> | <b>PM Peak<br/>Hour<sup>3</sup></b> | <b>85th<br/>Percentile<br/>Speed<sup>4</sup></b> |
|-------------------------------|------------------|------------------------|-------------------------------------|-------------------------------------|--|
| <b>Main Street (Route 28)</b> | Northbound       | 5,820                  | 400                                 | 520                                 | 38   |
|                               | Southbound       | <u>5,410</u>           | <u>405</u>                          | <u>375</u>                          | 39   |
|                               | Combined         | 11,230                 | 805                                 | 895                                 | --   |

- 1 Average Daily Traffic (vehicles per day)
- 2 Weekday morning peak hour volume, occurring from 7:45 - 8:45 AM
- 3 Weekday afternoon peak hour volume, occurring from 5:00 - 6:00 PM
- 4 85th percentile speed (mph)

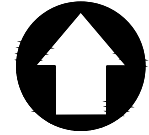
As shown in Table 2, Main Street (Route 28) carries an average daily traffic (ADT) of approximately 11,230 vehicles per day (vpd), with approximately 5,820 vpd northbound and approximately 5,410 vpd southbound. Based on the results of the ATR, the 85<sup>th</sup> percentile speed on Main Street in the vicinity of the project site was recorded to be 38 mph in the northbound direction and 39 mph in the southbound direction.

Seasonal Variation

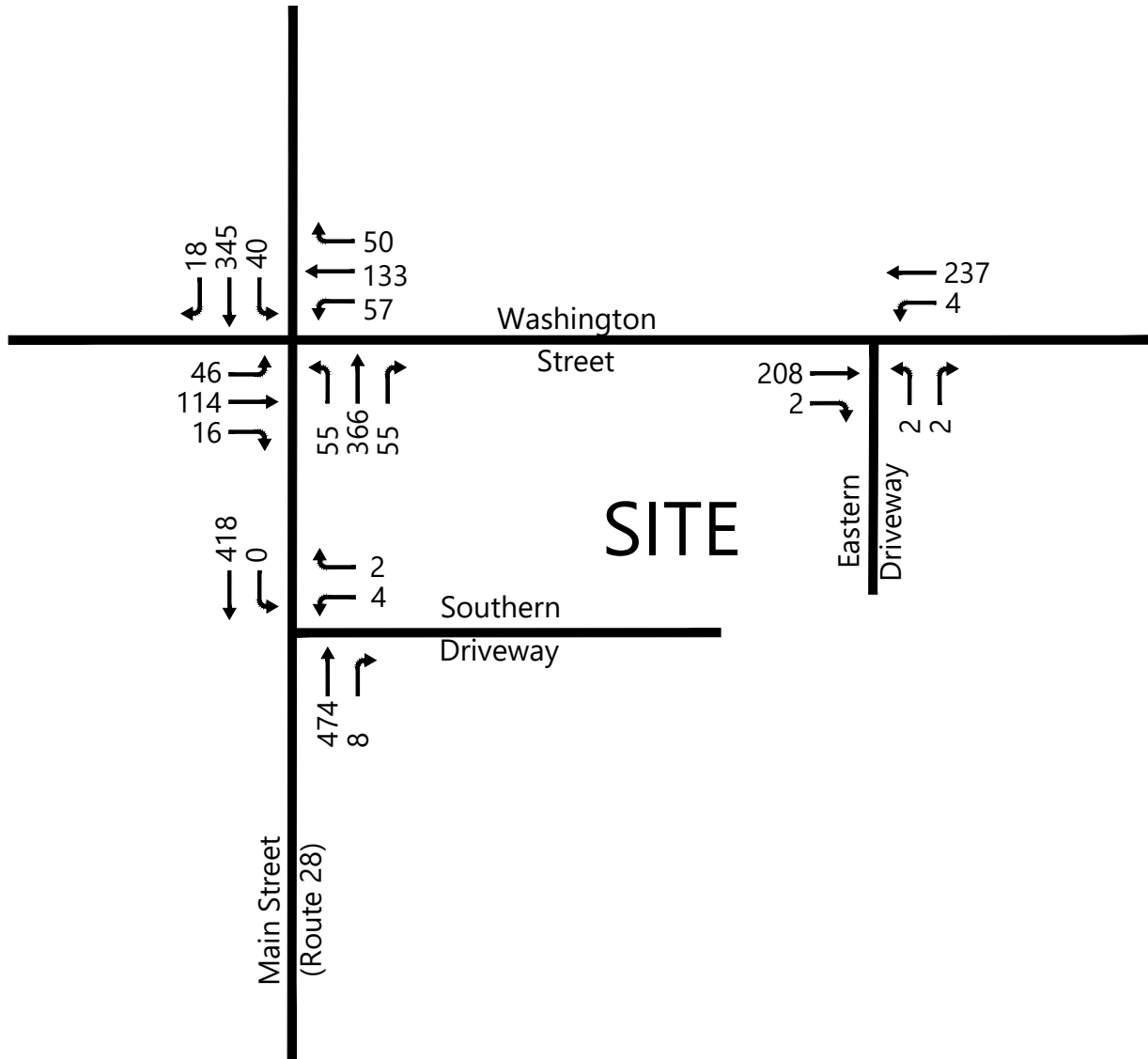
Based on MassDOT's 2019 Weekday Seasonal Factors, January traffic volumes on urban principal arterial roadways are lower than an average month. To provide a conservative analysis, the counted volumes were seasonally adjusted upward by six (6) percent to reflect an average month. The MassDOT seasonal adjustment data is provided in Appendix B of this report.

The resulting 2023 Existing weekday morning and weekday afternoon peak hour traffic volumes are presented in the traffic projection model provided in Appendix C and are displayed in Figure 2 and Figure 3.

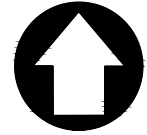




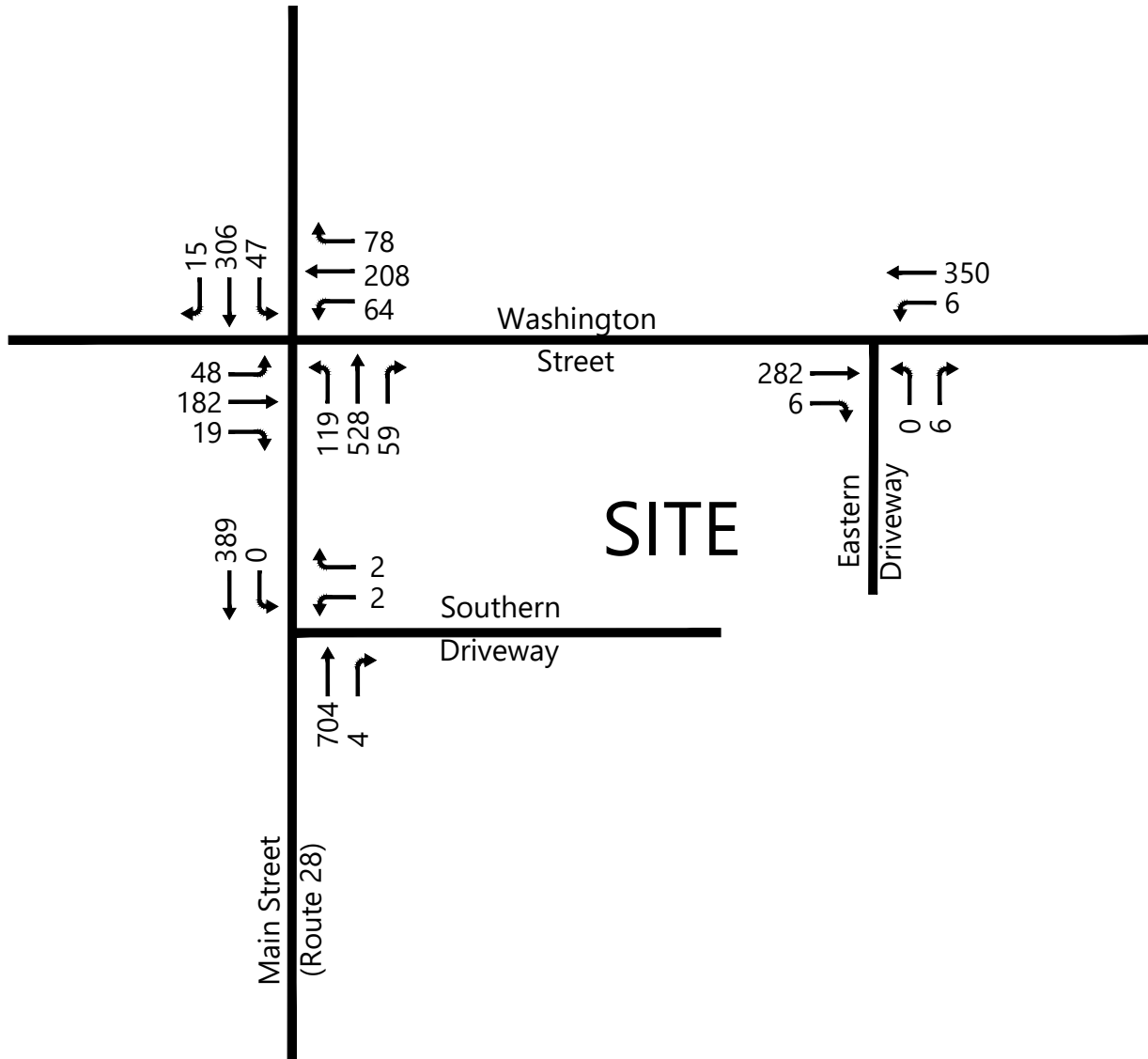
SCHEMATIC-  
NOT TO SCALE



SITE



SCHEMATIC-  
NOT TO SCALE



SITE

Figure 3  
2023 Existing Weekday Afternoon  
Peak Hour Traffic Volumes  
Proposed Bank  
Reading, Massachusetts

### **Crash Summary**

Crash data in the vicinity of the project site was obtained from MassDOT for the most recent five-year period available. This data includes complete yearly crash summaries for the years 2016 through 2020. A detailed summary of the crash data is provided in Appendix D.

The signalized intersection of Main Street (Route 28) at Washington Street is reported to have experienced 46 crashes during the five-year period analyzed, resulting in a crash rate of 1.36 crashes per million entering vehicles (MEV). This crash rate is higher than the MassDOT statewide and district-wide averages for signalized intersections of 0.78 and 0.89 crashes per MEV, respectively. Of these 46 crashes, 23 were angle collisions, thirteen were rear-end collisions, four were sideswipe crashes, four were single vehicle crashes, and two were head-on collisions. Two crashes resulted in personal injury, 42 crashes resulted in property damage only, and the severity of the remaining two were unknown.

The unsignalized intersection of Main Street (Route 28) at the Southern Project Site Driveway is reported to have experienced one crash during the five-year period analyzed, resulting in a crash rate of 0.03 crashes per MEV. This crash rate is lower than the MassDOT statewide and district-wide averages for unsignalized intersections of 0.57 and 0.61 crashes per MEV, respectively. The crash was a sideswipe collision that resulted in property damage only.

The unsignalized intersection of Washington Street at the Eastern Project Site Driveway is reported to have experienced one crash during the five-year period analyzed, resulting in a crash rate of 0.08 crashes per MEV, which is lower than the statewide and district-wide averages. The crash was a single vehicle collision that resulted in property damage only.

No crashes involving pedestrians or bicyclists were reported at the study area intersections within the time frame analyzed. None of the above intersections have been identified by MassDOT as a Highway Safety Improvement Program (HSIP) high crash location for the study period. The intersection of Main Street (Route 28) at Washington Street was included in a Road Safety Audit (RSA) prepared by Stantec for MassDOT in March 2017 as part of MassDOT project number 604804 which included roadway resurfacing and potential implementation of a road diet. Some improvements were identified for the intersection of Main Street (Route 28) at Washington Street such as changes to lane usage at the signal, addition of a flashing yellow arrow, addition of retroreflective signal backplates, tree trimming, reconfiguration of site access driveways near the intersection, updating signal clearance timings, updating pedestrian signal accommodations, and providing bicycle lanes. The Town of Reading was identified as the responsible agency for any improvements since Main Street (Route 28) is under local jurisdiction. At the time of the site visit for this project, it did not appear that any of the RSA improvements at the signalized intersection had been implemented.

It should be noted that as part of this proposed redevelopment, the project site driveways serving the site are proposed to be reconfigured to be right-in and right-out only. The reconfiguration of the site driveways helps address the RSA comment regarding reconfiguration of site access driveways near the intersection and should improve the overall safety of the study area.



## **FUTURE CONDITIONS**

To determine future traffic demands on the study area roadways and intersections, the 2023 Existing traffic volumes were projected to the future-year 2030, in accordance with MassDOT guidelines. Traffic volumes on the study area roadways in 2030 are considered to include existing traffic, as well as new traffic resulting from general growth in the study area and from other planned development projects, independent of the proposed project. The potential background traffic growth, unrelated to the proposed project, was considered in the development of the 2030 No Build (without project) peak hour traffic volumes. The estimated traffic increases associated with the proposed project were then added to the 2030 No Build volumes to reflect the 2030 Build (with project) traffic conditions. A more detailed description of the development of the 2030 No Build and 2030 Build traffic volume networks is presented below.

### ***Future Roadway Improvements***

Planned roadway improvement projects can impact travel patterns and future traffic operations. The MassDOT project information dashboard and the Town of Reading were consulted to develop an understanding of future area roadway improvement projects.

The MassDOT dashboard does not indicate any other major projects which would be anticipated to impact future traffic conditions at the study area intersections. Based on coordination with the Town of Reading, there are no planned roadway improvement projects in the vicinity of the Project site that would be anticipated to impact future traffic volumes or patterns.

### ***Background Traffic Growth***

Traffic growth is generally a function of changes in motor vehicle use and expected land development within the area. To establish the rate at which traffic on the study area roadways can be expected to grow during the seven-year forecast period (2023 to 2030), both planned area developments and historic traffic growth were reviewed.

#### Historic Traffic Growth

Background traffic growth accounts for changes in traffic volumes associated with general changes in population and other developments that are not known at this time. An annual background traffic growth rate of 0.5% per year, compounded annually, was established for the study area in conjunction with the Town of Reading to grow the 2023 traffic volumes to future year 2030.

#### Site-Specific Growth

Based on coordination with the Town of Reading Planning Department, three developments were identified in the vicinity of the project site that would be expected to impact traffic volumes within the study area. These include a proposed mixed-use redevelopment located at 459 Main Street (Route 28) approximately 200 feet north of the project site, a proposed mixed-use development at 531 Main Street (Route 28) approximately 0.1 miles north of the project site, and a proposed residential development at 6 Chute Street approximately 0.6 miles northwest from the project site. A description of each development and the methodology applied to account for traffic anticipated to be added to the study area is provided below.

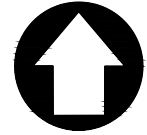
The proposed mixed-use redevelopment located at 459 Main Street (Route 28) includes the demolition of the existing "128 Tire" auto body shop and construction of a four-story mixed-use building with twelve residential units on the upper three floors and up to 2,000 sf of ground-floor retail space. Vehicle trips associated with the proposed mixed-use redevelopment were applied to the study area based on information presented in the Traffic Impact Assessment Study dated March 3, 2022, prepared by TEC. The Traffic Impact Assessment Study includes the distribution of trips associated with the proposed mixed-use redevelopment during the weekday morning and weekday afternoon, peak hours. The trip generation and distribution information presented in the Traffic Impact Assessment Study were applied to the study area to develop the 2030 No Build traffic volumes and are provided in the traffic projection model in Appendix C.

The proposed development at 531 Main Street (Route 28) includes demolition of an existing 3,820 sf one-story building and construction of a new 4-story building with 19 residential units and 1,078 sf of retail space. Vehicle trips associated with the proposed mixed-use development were obtained from the Traffic Assessment Memorandum dated June 1, 2020, prepared by Vanasse & Associates, Inc. The Traffic Assessment Memorandum includes the trip generation associated with the proposed mixed-use development during the weekday morning and weekday afternoon peak hour trips. To be conservative, all the new entering and exiting project trips were considered to pass through the Main Street (Route 28) at Washington Street intersection. Therefore, the project trips presented in the Traffic Assessment Memorandum for the weekday morning and weekday afternoon peak hours were applied to the study area to develop the 2030 No Build traffic volumes, which are provided in the traffic projection model in Appendix C.

The proposed residential development at 6 Chute Street would include the construction of 3,000 sf of retail on the first floor and 33 apartment units on the upper three floors. Vehicle trips associated with the proposed residential development were obtained from the Traffic Impact and Access Study dated June 2021, prepared by Green International Affiliates, Inc. The Traffic Impact and Access Study includes the distribution of trips associated with the proposed residential development during the weekday morning and weekday afternoon peak hour trips. Vehicle trips associated with the 6 Chute Street project were applied to the study area to develop the 2030 No Build traffic volumes and are provided in the traffic projection model in Appendix C.

### ***2030 No Build Traffic Volumes***

The 2023 Existing peak hour traffic volumes were grown by 0.5% per year, compounded annually, over the seven-year study horizon to establish the 2030 No Build weekday morning and weekday afternoon peak hour traffic volumes, which are illustrated in Figure 4 and Figure 5, respectively. The 2030 No Build traffic volumes are documented in the traffic projection model presented in Appendix C of this report.



SCHEMATIC-  
NOT TO SCALE

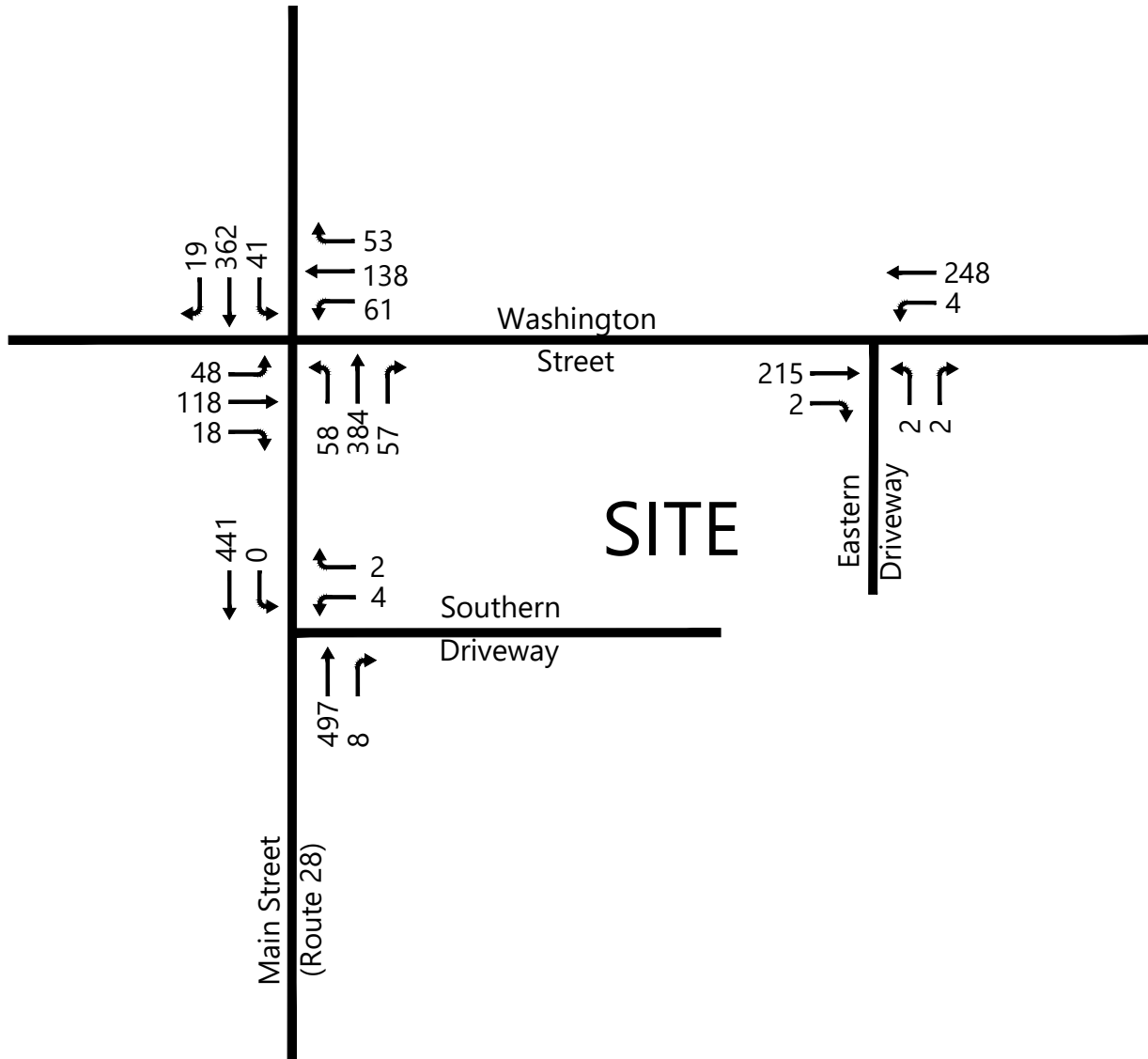
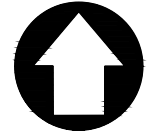
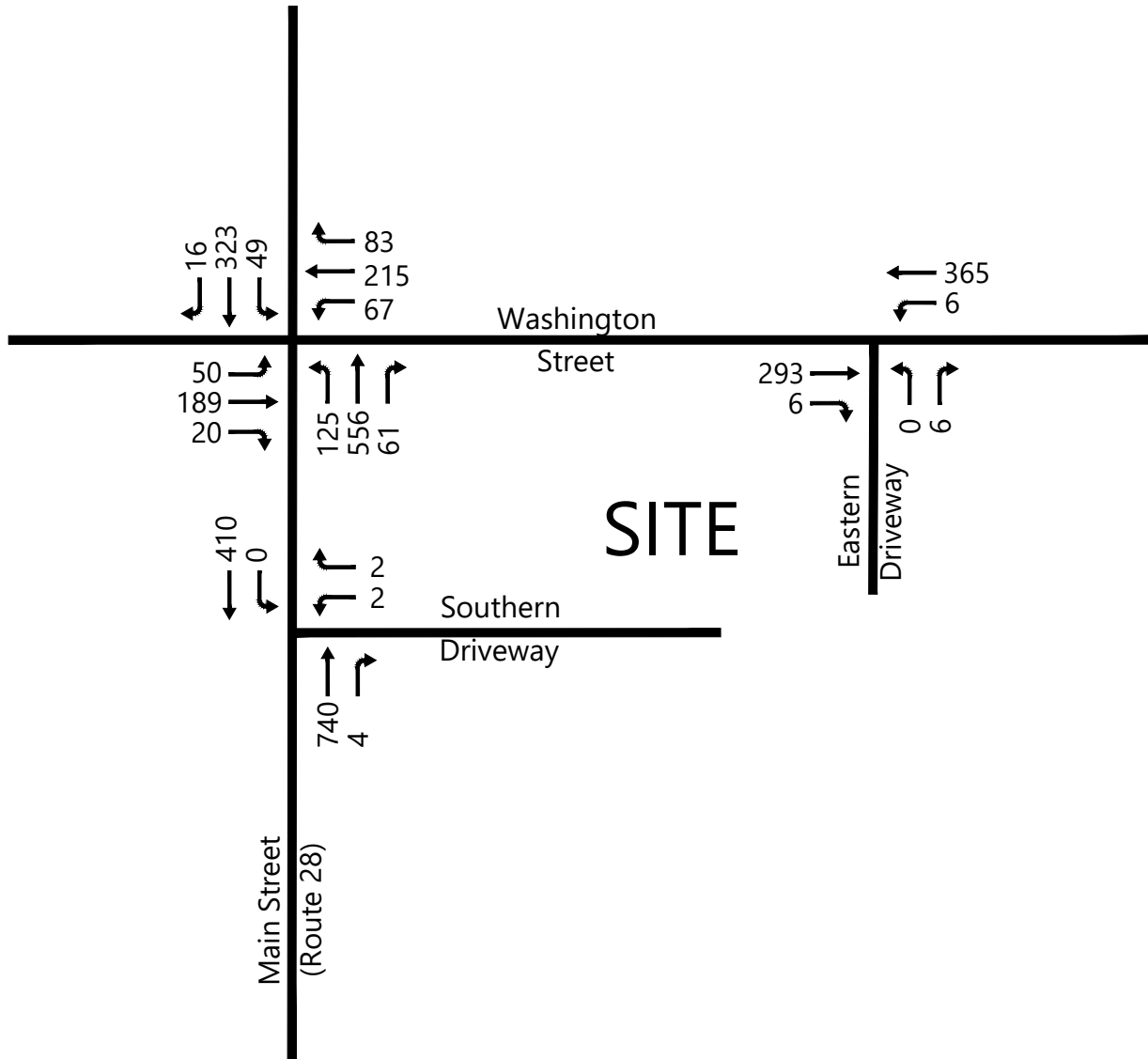


Figure 4  
2030 No Build Weekday Morning  
Peak Hour Traffic Volumes  
Proposed Bank  
Reading, Massachusetts





SCHEMATIC-  
NOT TO SCALE



SITE

Figure 5  
2030 No Build Weekday Afternoon  
Peak Hour Traffic Volumes  
Proposed Bank  
Reading, Massachusetts

**Site-Generated Traffic**

To estimate the number of vehicle trips associated with the proposed bank, the Institute of Transportation Engineers' (ITE) publication, *Trip Generation Manual, 11th Edition*, was referenced. ITE is a national research organization of transportation professionals, and the *Trip Generation Manual, 11th Edition* provides traffic generation information for various land uses compiled from studies conducted by members nationwide. This reference establishes vehicle trip rates (in this case expressed in trips per square foot) based on actual traffic counts conducted at similar types of existing land uses. Vehicle trip estimates for the proposed bank were developed based on data presented for LUC 911 (Walk-In Bank).

Not all trips to a Walk-in Bank are considered "new" trips. In fact, a significant portion of the total trips attracted to such land uses are "pass-by" trips. Since pass-by traffic is already on the adjacent roadways, this portion of the total development traffic is reflected in the existing, base traffic volumes, and does not represent additional traffic on the roadway network. Therefore, the total traffic volume associated with the project is reduced by the pass-by volume to estimate the "new" traffic generated by the project.

ITE does not provide a pass-by rate for LUC 911, but according to ITE data for the similar LUC 912 (Drive-in Bank), 29 percent of the weekday morning trips and 35 percent of the weekday afternoon peak hour trips can be attributed as pass-by trips. In order to estimate the number of pass-by trips associated with the bank project, the pass-by rates for LUC 912 were applied to the overall trip generation determined using LUC 911 for project site. A summary of the peak hour trip generation estimates for the project are summarized in Table 3 below.

**Table 3: Estimated Project Trips**

| Description                 | Weekday Morning        |          |           | Weekday Afternoon      |           |           |
|-----------------------------|------------------------|----------|-----------|------------------------|-----------|-----------|
|                             | Peak Hour <sup>3</sup> |          |           | Peak Hour <sup>1</sup> |           |           |
|                             | In                     | Out      | Total     | In                     | Out       | Total     |
| Proposed Walk-In Bank       | 11                     | 8        | 19        | 18                     | 22        | 40        |
| -Pass By Trips <sup>2</sup> | -3                     | -3       | -6        | -7                     | -7        | -14       |
| <b>New Project Trips</b>    | <b>8</b>               | <b>5</b> | <b>13</b> | <b>11</b>              | <b>15</b> | <b>26</b> |

(1) ITE Land Use Code 911 (Walk-In Bank), based on 3,293 s.f. gross floor area.

(2) According to ITE, for Land Use Code 912 (Drive-In Bank) approximately 29% of weekday morning and 35% of weekday afternoon peak hour trips are attributed to pass-by trips.

(3) Correlation of weekday morning and weekday afternoon peak hour data established from ITE Land use Code 912 (Drive-In Bank).

As shown in Table 3, the proposed project is projected to result in approximately 13 new trips (8 entering vehicles and 5 exiting vehicles) during the weekday morning peak hour and approximately 26 new trips (11 entering vehicles and 15 exiting vehicles) during the weekday afternoon peak hour.

With consideration given to the existing trips at the gas station and automobile service center driveways on the site (previously summarized in Table 1) the proposed redevelopment is projected to result in an overall net reduction in trips to the site during both the weekday morning and weekday afternoon peak hours. However, to present a conservative analysis of future Build conditions, the existing trips associated with the gas station and automobile service center were not removed from the study area roadways.

***Project Trip Distribution and Assignment***

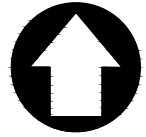
The traffic estimated to be generated by the proposed redevelopment was distributed onto the study area roadways and intersections based on the existing and logical travel patterns of the adjacent roadways, taking into consideration the proposed right-in/right-out access at both site driveways. The resulting arrival and departure patterns are presented in Figure 6 and are documented in the traffic projection model located in Appendix C.

The project-related traffic was then assigned to the surrounding roadway network based on the project trip distribution patterns presented in Figure 6. The resulting distributed new project trips are shown in Figure 7 and Figure 8 for the weekday morning and weekday afternoon peak hours, respectively.

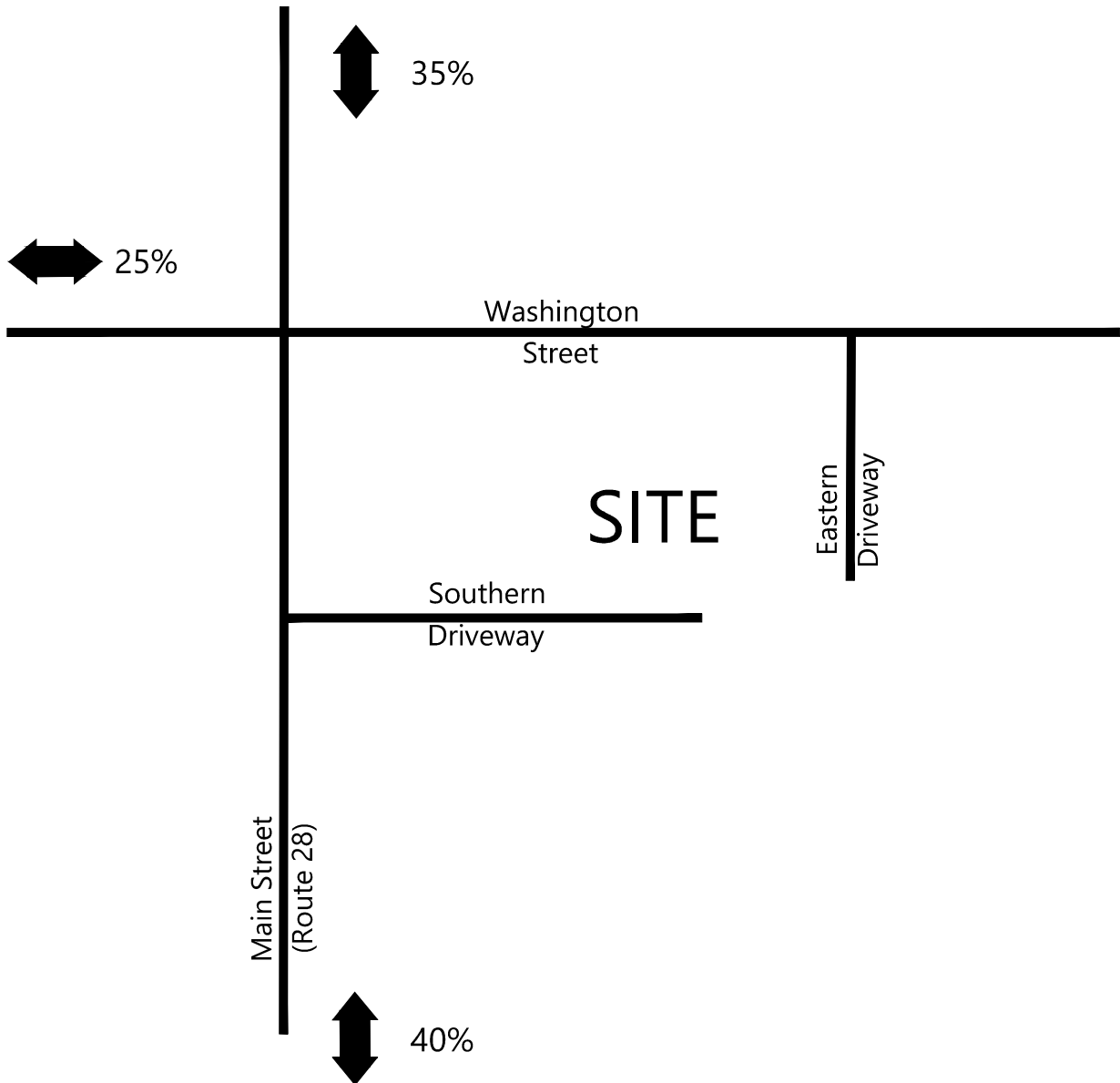
***2030 Build Traffic Volumes***

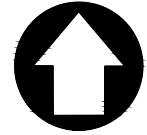
To establish the 2030 Build peak hour traffic volumes, the distributed new project trips shown in Figure 7 and Figure 8 were then added to the 2030 No Build peak hour traffic volumes to reflect the 2030 Build peak hour traffic volumes. The resulting 2030 Build weekday morning and weekday afternoon, peak hour traffic volumes are presented in Figure 9 and Figure 10, respectively. The 2030 Build traffic volumes are documented in the traffic projection model presented in Appendix C of this report.



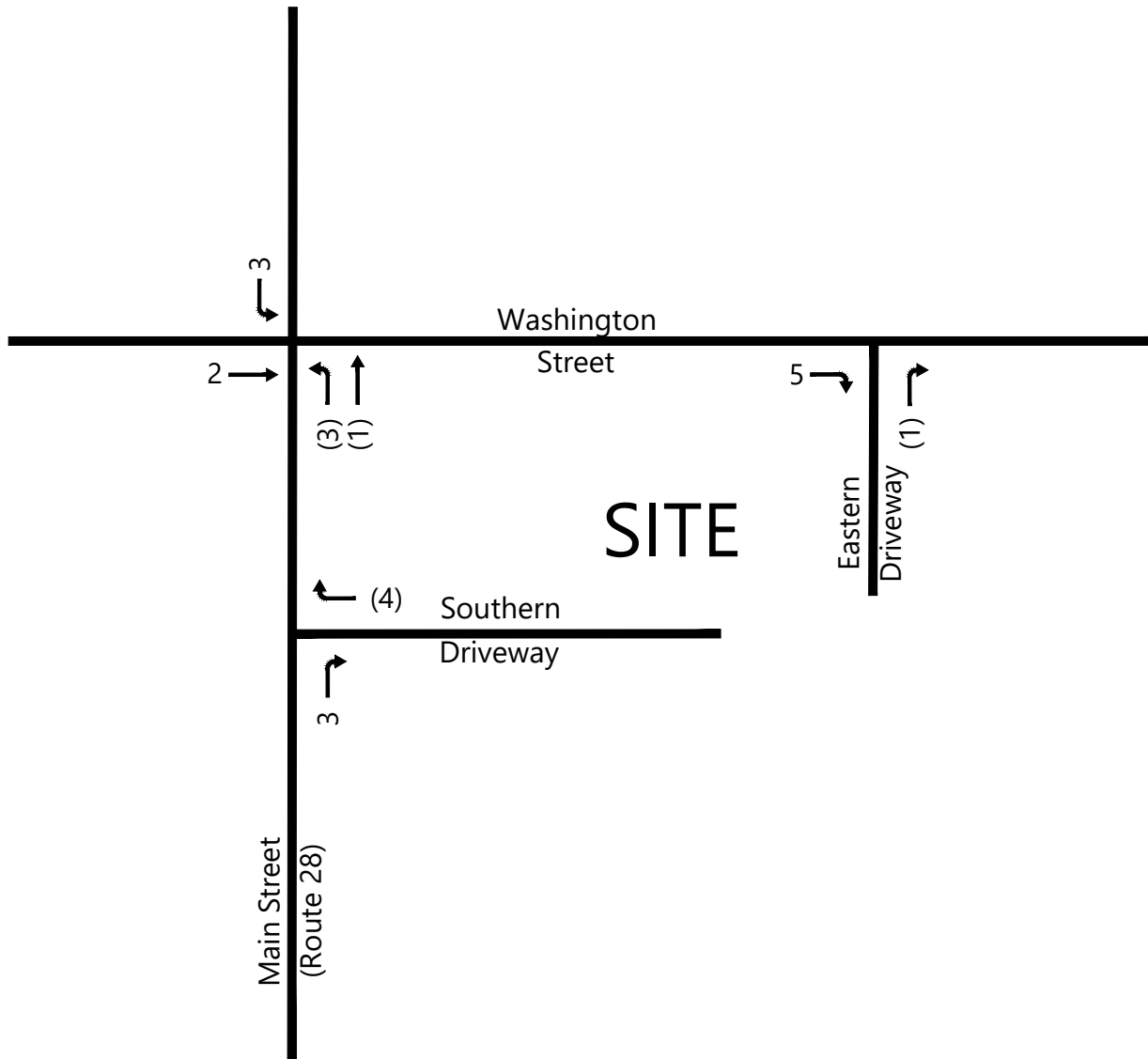


SCHEMATIC-  
NOT TO SCALE

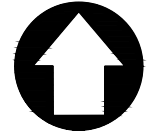




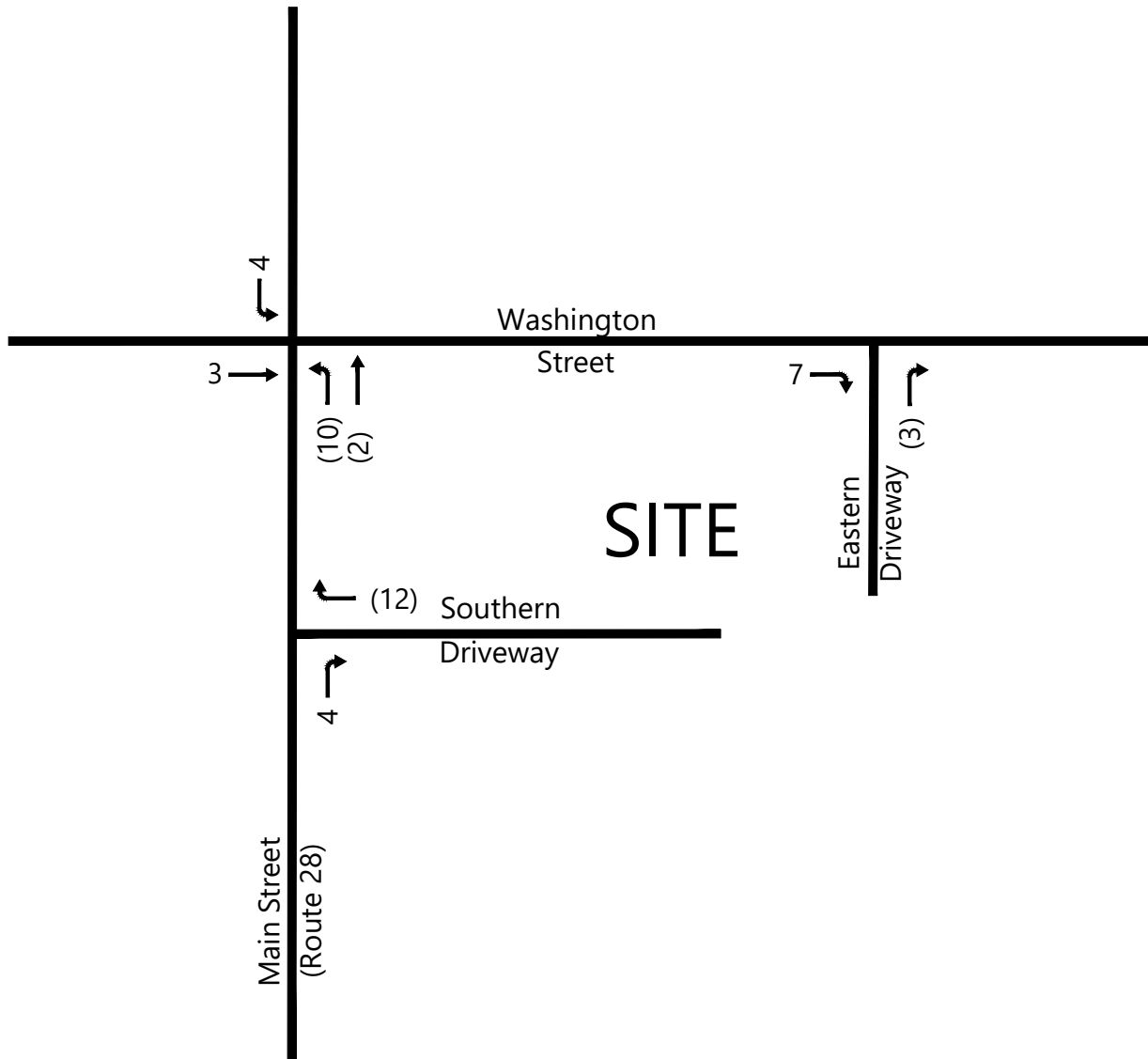
SCHEMATIC-  
NOT TO SCALE



Legend  
Enter (Exit)

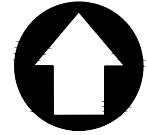


SCHEMATIC-  
NOT TO SCALE

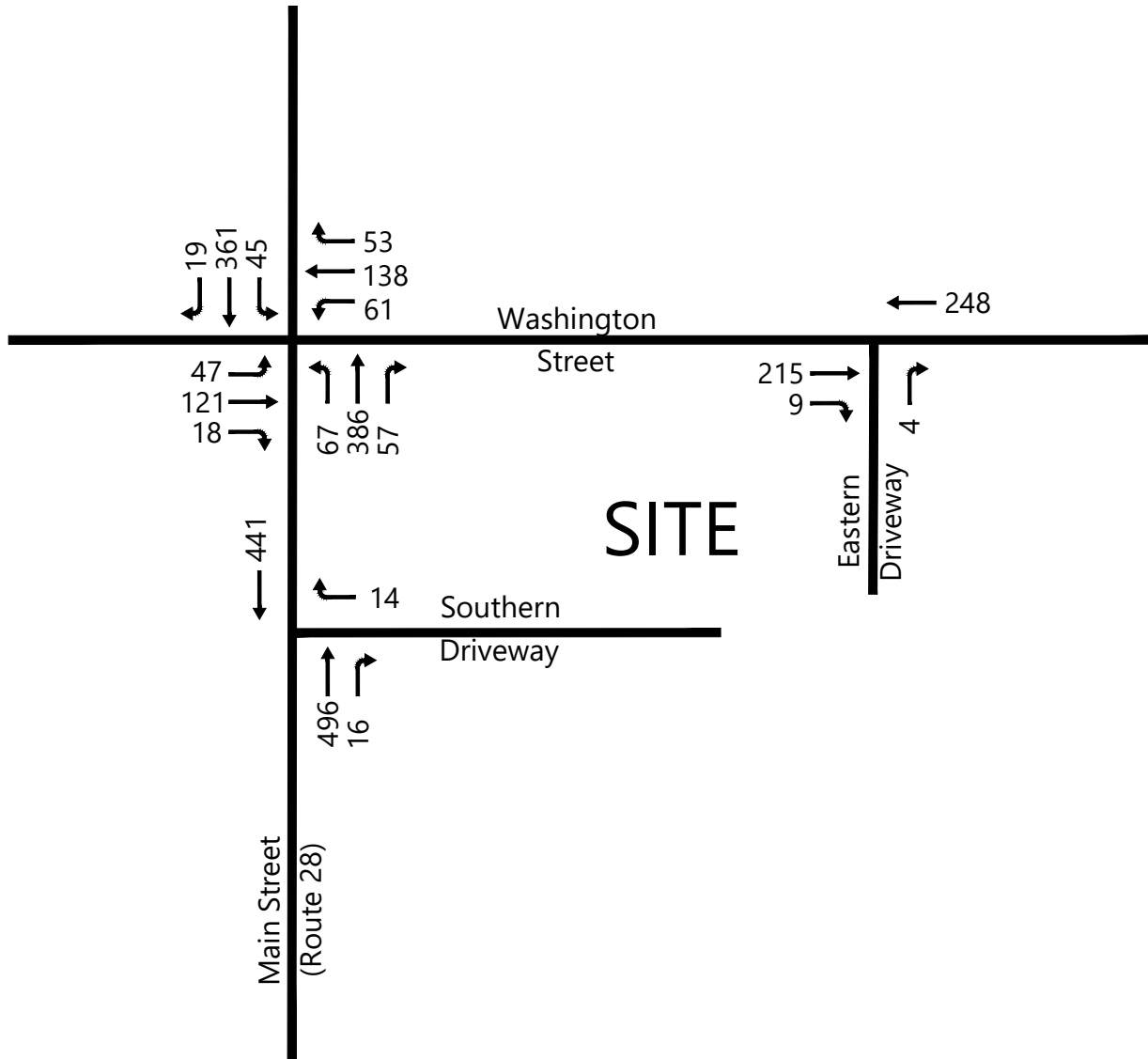


Legend  
Enter (Exit)



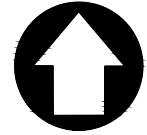


SCHEMATIC-  
NOT TO SCALE



SITE

Figure 9  
2030 Build Weekday Morning  
Peak Hour Traffic Volumes  
Proposed Bank  
Reading, Massachusetts



SCHEMATIC-  
NOT TO SCALE

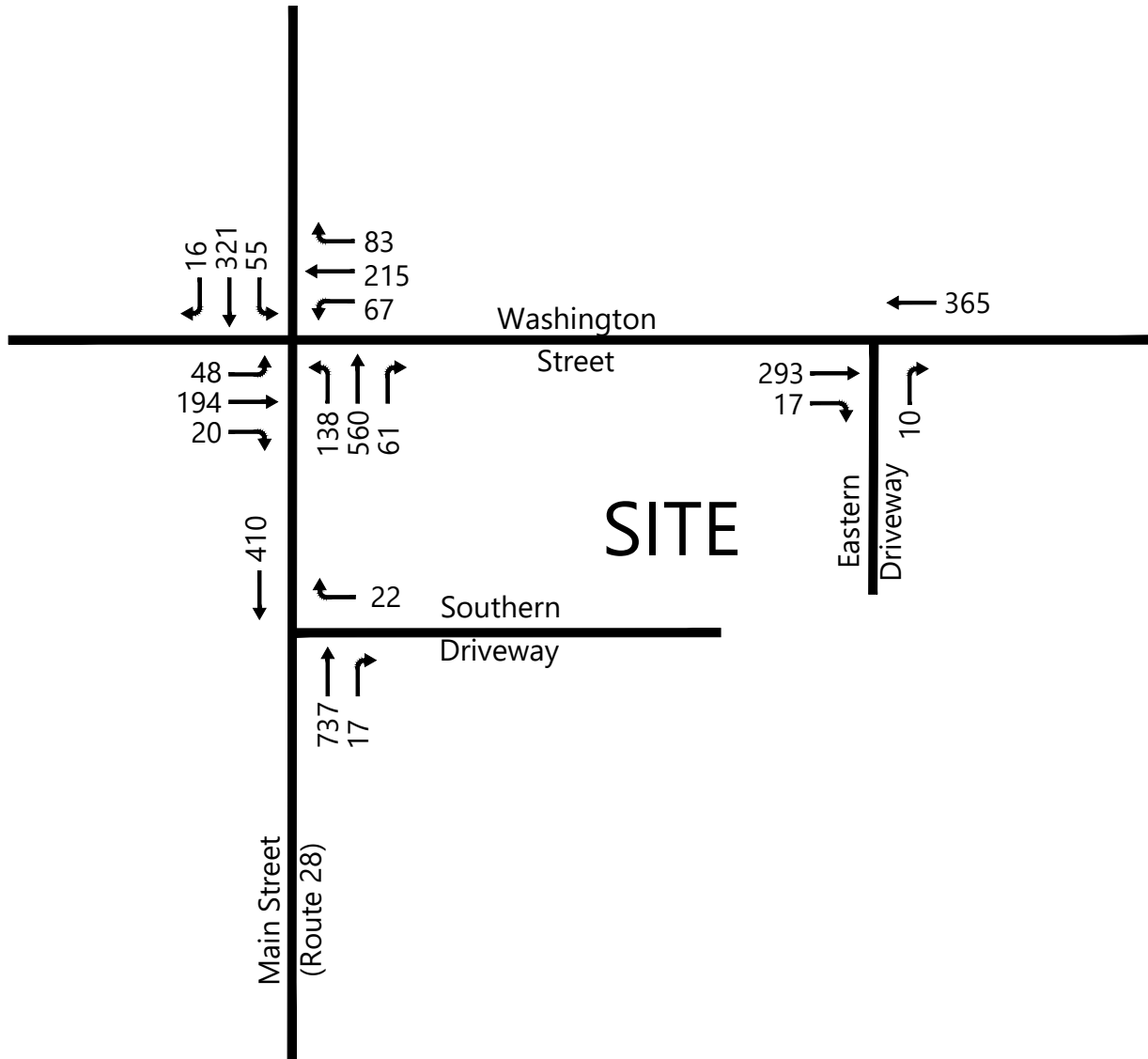


Figure 10  
2030 Build Weekday Afternoon  
Peak Hour Traffic Volumes  
Proposed Bank  
Reading, Massachusetts

## **TRAFFIC OPERATIONS ANALYSIS**

In previous sections of this report, the quantity of traffic at the study area intersections has been discussed. This section describes the overall quality of the traffic flow at the study area intersections during the weekday morning and weekday afternoon peak hours. As a basis for this assessment, intersection capacity analysis was conducted using the Synchro capacity analysis software at the study area intersections under the 2023 Existing, 2030 No Build, and 2030 Build peak hour traffic conditions. The analysis is based on Synchro capacity analysis methodologies and procedures contained in the *Highway Capacity Manual, 6<sup>th</sup> Edition* (HCM), which are summarized in Appendix E. A discussion of the evaluation criteria and a summary of the results of the capacity analysis are presented below.

### ***Level-of-Service Criteria***

Average total vehicle delay is reported as level-of-service (LOS) on a scale of A to F. LOS A represents delays of 10 seconds or less and LOS F represents delays in excess of 50 seconds for unsignalized intersections and greater than 80 seconds for signalized intersections. A more detailed description of the LOS criteria is provided in Appendix E.

### ***Capacity Analysis Results***

Intersection capacity analysis was conducted using Synchro capacity analysis software for the study area intersections to evaluate the 2023 Existing, 2030 No Build, and 2030 Build traffic conditions during the weekday morning and weekday afternoon peak hours. The peak hour traffic volumes utilized as part of this analysis are provided in the traffic projection model, attached in Appendix C of this report.

The Synchro capacity analysis results for the 2023 Existing, 2030 No Build and 2030 Build traffic conditions are presented in Appendix F, Appendix G, and Appendix H, respectively. The capacity analysis results for the study area intersections are presented in Table 4 and Table 5 below for the weekday morning and weekday afternoon peak hours, respectively. The results of the specific capacity analysis at the study area intersections are discussed below, with a more detailed summary of the capacity analysis for the study area intersection provided in Appendix I.



**Table 4: Weekday Morning Intersection Capacity Analysis**

| Intersection  | Movement       | 2023 Existing    |                    |                  | 2030 No Build |             |             | 2030 Build |             |             |
|---|----------------|------------------|--------------------|------------------|---------------|-------------|-------------|------------|-------------|-------------|
|   |                | LOS <sup>1</sup> | Delay <sup>2</sup> | V/C <sup>3</sup> | LOS           | Delay       | V/C         | LOS        | Delay       | V/C         |
| Main Street (Route 28) at<br>Washington Street      | EB L           | C                | 28.0               | 0.18             | C             | 28.9        | 0.16        | C          | 29.3        | 0.16        |
|   | TR             | C                | 28.2               | 0.24             | C             | 29.1        | 0.23        | C          | 29.5        | 0.24        |
|   | WB LTR         | E                | 61.6               | 0.82             | E             | 63.3        | 0.80        | E          | 64.0        | 0.81        |
|   | NB LTR         | D                | 39.4               | 0.66             | D             | 36.6        | 0.65        | D          | 37.3        | 0.67        |
|   | SB LTR         | C                | 33.7               | 0.50             | C             | 31.3        | 0.50        | C          | 31.6        | 0.51        |
|   | <i>Overall</i> | <i>D</i>         | <i>40.8</i>        | <i>0.65</i>      | <i>D</i>      | <i>38.9</i> | <i>0.67</i> | <i>D</i>   | <i>39.4</i> | <i>0.68</i> |
| Main Street (Route 28) at<br>Southern Site Driveway | WB LR          | B                | 13.7               | 0.03             | B             | 14.0        | 0.02        | -          | -           | -           |
|   | R              | -                | -                  | -                | -             | -           | -           | B          | 10.1        | 0.02        |
| Washington Street at<br>Eastern Site Driveway       | NB LR          | B                | 11.3               | 0.01             | B             | 10.7        | 0.01        | -          | -           | -           |
|   | R              | -                | -                  | -                | -             | -           | -           | A          | 9.5         | 0.01        |

1 Level-of-Service

2 Average vehicle delay in seconds

3 Volume to capacity ratio

**Table 5: Weekday Afternoon Intersection Capacity Analysis**

| Intersection  | Movement       | 2023 Existing    |                    |                  | 2030 No Build |             |             | 2030 Build |             |             |
|---|----------------|------------------|--------------------|------------------|---------------|-------------|-------------|------------|-------------|-------------|
|   |                | LOS <sup>1</sup> | Delay <sup>2</sup> | V/C <sup>3</sup> | LOS           | Delay       | V/C         | LOS        | Delay       | V/C         |
| Main Street (Route 28) at<br>Washington Street      | EB L           | C                | 31.9               | 0.17             | C             | 33.9        | 0.16        | C          | 34.2        | 0.16        |
|   | TR             | C                | 33.5               | 0.32             | D             | 35.6        | 0.31        | D          | 36.3        | 0.32        |
|   | WB LTR         | E                | 75.9               | 0.90             | E             | 75.1        | 0.88        | E          | 77.8        | 0.89        |
|   | NB LTR         | D                | 49.1               | 0.79             | D             | 50.8        | 0.83        | D          | 52.0        | 0.84        |
|   | SB LTR         | D                | 41.0               | 0.53             | D             | 42.3        | 0.56        | D          | 42.8        | 0.58        |
|   | <i>Overall</i> | <i>D</i>         | <i>50.9</i>        | <i>0.80</i>      | <i>D</i>      | <i>51.7</i> | <i>0.83</i> | <i>D</i>   | <i>52.9</i> | <i>0.84</i> |
| Main Street (Route 28) at<br>Southern Site Driveway | WB LR          | B                | 14.7               | 0.02             | C             | 15.9        | 0.01        | -          | -           | -           |
|   | R              | -                | -                  | -                | -             | -           | -           | B          | 11.3        | 0.04        |
| Washington Street at<br>Eastern Site Driveway       | NB LR          | A                | 9.9                | 0.01             | B             | 10          | 0.01        | -          | -           | -           |
|   | R              | -                | -                  | -                | -             | -           | -           | B          | 10.1        | 0.02        |

1 Level-of-Service

2 Average vehicle delay in seconds

3 Volume to capacity ratio

**Main Street (Route 28) at Washington Street**

As displayed above, the existing signalized intersection of Main Street (Route 28) at Washington Street is shown to currently operate at overall LOS D during both the weekday morning and weekday afternoon peak hours. Under 2030 No Build conditions (without the proposed project), the intersection is shown to continue operating at overall LOS D during both peak hours analyzed. With the proposed project in place, the intersection is shown to experience minor increases in overall average vehicle delay and is projected to operate at overall LOS D during all peak hours analyzed, with all approaches operating under capacity (volume-to-capacity ratio under 1.0). The proposed redevelopment would not be expected to result in a change in LOS on any approach to the intersection during either peak hour studied.

It should be noted that the 2030 No Build conditions are projected to be improved relative to 2023 Existing conditions. As per MassDOT guidance, under future conditions the peak hour factors of all approaches are adjusted to a typical value. This change in peak hour factor results in the modeled vehicle operations improving slightly, as shown in Tables 4 and 5.

#### Main Street (Route 28) at proposed Southern Project Site Driveway

With the proposed project in place under 2030 Build conditions, the westbound right-turn movement from the project site onto Main Street (Route 28) is shown to operate at LOS B during both the weekday morning and weekday afternoon peak hours, and well under capacity. This movement is projected to operate under capacity which indicates that exiting vehicles can be processed and the minimal delay experienced is a function of the volumes on Main Street (Route 28).

#### Washington Street at proposed Eastern Project Site Driveway

With the proposed project in place under 2030 Build conditions, the northbound exiting right-turn movement from the proposed Eastern Project Site Driveway onto Washington Street is shown to operate at LOS B under both peak hours analyzed, and well under capacity.

The exiting delay and vehicle queues at the project site driveways resulting from the proposed project are shown to be less than what is currently experienced at the existing gas station on site. The delay experienced at the project site driveways would be incurred by vehicles internal to the site and would not be anticipated to impact operations along Main Street (Route 28) or Washington Street.

#### **Site Access and Circulation**

Access to the project site would be reconfigured to provide one right-in/right-out site driveway on Main Street (Route 28) and one right-in/right-out site driveway on Washington Street. The proposed change in access to the project site should result in safer and more efficient maneuvers to and from the project site and at the adjacent intersection of Main Street (Route 28) at Washington Street. The RSA completed at the adjacent signalized intersection of Main Street (Route 28) at Washington Street identified the reconfiguration of these driveways as a safety improvement that would benefit the surrounding roadway and intersection network.

Project site access would be accommodated by a two-way circulatory parking lot. Signage and pavement markings are proposed to inform drivers of the site circulation. Based on a review of the site plan, the existing driveways and proposed parking lot is expected to allow for safe and efficient site access and circulation.

#### **Sight Distance**

A field review of the available sight distance was conducted at the proposed Southern Project Site Driveway on Main Street (Route 28) and the proposed Eastern Project Site Driveway on Washington Street. The American Association of State Highway and Transportation Officials (AASHTO) publication, *A Policy on Geometric Design, 2018 Edition*, defines minimum and recommended sight distances at intersections.

The minimum sight distance is based on the required stopping sight distance (SSD) for vehicles traveling along the main road. The recommended sight distance allows vehicles to enter the main street traffic flow without requiring the mainline traffic to slow to less than 70% of their speed and is referred to as intersection sight distance (ISD). According to AASHTO, "If the available sight distance

for an entering or crossing vehicle is at least equal to the appropriate stopping sight distance for the major road, then drivers have sufficient time to anticipate and avoid collisions.” The 85<sup>th</sup> percentile speed along Main Street (Route 28) was used to establish the stopping sight distance and intersection sight distance criteria at the southern project site driveway on Main Street (Route 28), while the posted 30 mph speed limit on Washington Street was used to establish the stopping sight distance and intersection sight distance criteria at the northern project site driveway, as shown in Table 6 and Table 7, respectively.

**Table 6: Stopping Sight Distance Requirements**

| Site Driveway Location  | Travelling | Speed Limit (mph) | 85th % Speed (mph) | SSD <sup>1</sup> Required | Sight Distance Measured | Meets SSD? |
|---|------------|-------------------|--------------------|---------------------------|-------------------------|------------|
| Eastern Project Site Driveway at Washington Street <sup>2</sup>       | Eastbound  | 30                | -                  | 200                       | >200                    | Yes        |
| Southern Project Site Driveway at Main Street (Route 28) <sup>3</sup> | Northbound | 30                | 39                 | 290                       | >500                    | Yes        |

1 Minimum required stopping sight distance (see AASHTO equations 3-2 and 3-3).

2 Minimum sight distance requirement is based on the posted speed limit.

3 Minimum sight distance requirement is based on the 85th percentile speed.

As shown in Table 6, the available SSD for vehicles exiting via the project site driveways exceed the minimum SSD requirements for the posted speed limit on Washington Street and 85<sup>th</sup> percentile speed on Main Street (Route 28).

**Table 7: Intersection Sight Distance Requirements**

| Site Driveway Location  | Looking      | Speed Limit (mph) | 85th % Speed (mph) | ISD <sup>1</sup> Recommended | Sight Distance Measured | Meets ISD? |
|---|--------------|-------------------|--------------------|------------------------------|-------------------------|------------|
| Eastern Project Site Driveway at Washington Street <sup>2</sup>       | Left (West)  | 30                | -                  | 290                          | 200                     | No         |
| Southern Project Site Driveway at Main Street (Route 28) <sup>3</sup> | Left (South) | 30                | 39                 | 375                          | >500                    | Yes        |

1 Intersection sight distance (see AASHTO equations 9-1 and 9-2).

2 Recommended sight distance is based on the posted speed limit.

3 Recommended sight distance is based on the 85th percentile speed.

As shown above in Table 7, the available ISD for vehicles exiting the site onto Washington Street from the Eastern Project Site Driveway was measured to be approximately 200 feet looking to the west, which is less than the recommended AASHTO distances based on the posted speed limit. Sight distance looking back to the west is limited by the existing horizontal roadway curve and trees on the south side of Washington Street just west of the intersection with Main Street (Route 28). Given the proximity to the traffic signal at the intersection of Main Street (Route 28) at Washington Street vehicles traveling past the site at the Eastern Project Site Driveway are likely going less than the posted speed limit in many instances, and the ISD recommendation provided in Table 7 is considered to be conservative.



The existing available ISD for vehicles exiting the site via the Southern Project Site Driveway onto Main Street (Route 28) exceeds the ISD recommendations for the 85<sup>th</sup> percentile speed.

## **CONCLUSION**

The proposed project involves the demolition of the existing gas station and automobile service center and the construction of a new 3,293 sf bank facility to be located at 431 Main Street (Route 28) in Reading, Massachusetts. The development would be accessed via one right-in/right-out driveway on Main Street (Route 28) and one right-in/right-out driveway on Washington Street. The unsignalized driveways would be under stop control for exiting site patrons. The right-in/right-out driveway configuration restricts left turning vehicles and reduces the number of potential conflict points at the site driveways. The proposed right-in/right-out driveways on Main Street (Route 28) and on Washington Street should improve traffic operations in the vicinity of the traffic signal at Main Street (Route 28)/Washington Street, and address safety concerns presented in the 2017 RSA.

The proposed project is estimated to generate approximately 13 new trips (8 entering vehicles and 5 exiting vehicles) during the weekday morning peak hour and approximately 26 new trips (11 entering vehicles and 15 exiting vehicles) during the weekday afternoon peak hour. When compared to the existing gas station and automobile center, the proposed redevelopment is projected to reduce the number of vehicle trips associated with the project site.

With the proposed project in place under 2030 Build conditions, operations at the project site driveways during the weekday morning and weekday afternoon peak hours are projected to operate at LOS B and under capacity. The project is not anticipated to have a noticeable impact on operations along Main Street (Route 28) or Washington Street, or at the signalized intersection of Main Street (Route 28) at Washington Street.

Based on a review of the analysis contained within this traffic impact study, the proposed redevelopment is not shown to have a significant impact on the overall traffic operations of the study area intersections and roadways.

# Appendix for Traffic Impact Study

## Proposed Bank

431 Main Street (Route 28)

Reading, MA

Prepared by

**McMahon**

350 Myles Standish Boulevard, Suite 103

Taunton, MA 02780

508.823.2245

Prepared for

**Bohler Engineering**

January 2023

**APPENDIX A**  
**Traffic Count Data**



# Transportation Data Corporation

Mario Perone, mperone1@verizon.net  
tel (781) 587-0086 cell (781) 439-4999

N/S: Main Street (Route 28)  
E/W: Washington Street  
City, State: Reading, MA  
Client: McM/Shana Gare

File Name : 05660A  
Site Code : Y22C2011  
Start Date : 1/4/2023  
Page No : 1

### Groups Printed- Cars & Peds

| Start Time         | Main Street (Route 28)<br>From North |            |           |          | Washington Street<br>From East |            |            |          | Main Street (Route 28)<br>From South |            |            |          | Washington Street<br>From West |            |           |          | Int. Total  |
|--------------------|--------------------------------------|------------|-----------|----------|--------------------------------|------------|------------|----------|--------------------------------------|------------|------------|----------|--------------------------------|------------|-----------|----------|-------------|
|                    | Right                                | Thru       | Left      | Peds     | Right                          | Thru       | Left       | Peds     | Right                                | Thru       | Left       | Peds     | Right                          | Thru       | Left      | Peds     |             |
| 07:00 AM           | 2                                    | 82         | 4         | 0        | 8                              | 16         | 15         | 1        | 10                                   | 48         | 8          | 0        | 1                              | 23         | 6         | 0        | 224         |
| 07:15 AM           | 3                                    | 71         | 5         | 1        | 10                             | 37         | 16         | 0        | 7                                    | 57         | 13         | 0        | 2                              | 32         | 6         | 0        | 260         |
| 07:30 AM           | 6                                    | 72         | 3         | 0        | 10                             | 32         | 12         | 0        | 11                                   | 69         | 15         | 0        | 2                              | 27         | 16        | 1        | 276         |
| 07:45 AM           | 3                                    | 82         | 8         | 0        | 12                             | 46         | 16         | 1        | 8                                    | 79         | 11         | 1        | 2                              | 22         | 13        | 0        | 304         |
| <b>Total</b>       | <b>14</b>                            | <b>307</b> | <b>20</b> | <b>1</b> | <b>40</b>                      | <b>131</b> | <b>59</b>  | <b>2</b> | <b>36</b>                            | <b>253</b> | <b>47</b>  | <b>1</b> | <b>7</b>                       | <b>104</b> | <b>41</b> | <b>1</b> | <b>1064</b> |
| 08:00 AM           | 7                                    | 68         | 3         | 0        | 12                             | 31         | 15         | 1        | 12                                   | 99         | 13         | 1        | 3                              | 18         | 11        | 0        | 294         |
| 08:15 AM           | 5                                    | 80         | 12        | 0        | 10                             | 21         | 10         | 2        | 13                                   | 78         | 12         | 0        | 5                              | 34         | 13        | 0        | 295         |
| 08:30 AM           | 2                                    | 85         | 12        | 0        | 12                             | 24         | 13         | 3        | 18                                   | 83         | 15         | 0        | 5                              | 33         | 5         | 0        | 310         |
| 08:45 AM           | 7                                    | 63         | 6         | 0        | 6                              | 13         | 10         | 0        | 7                                    | 79         | 15         | 0        | 2                              | 17         | 15        | 0        | 240         |
| <b>Total</b>       | <b>21</b>                            | <b>296</b> | <b>33</b> | <b>0</b> | <b>40</b>                      | <b>89</b>  | <b>48</b>  | <b>6</b> | <b>50</b>                            | <b>339</b> | <b>55</b>  | <b>1</b> | <b>15</b>                      | <b>102</b> | <b>44</b> | <b>0</b> | <b>1139</b> |
| <b>Grand Total</b> | <b>35</b>                            | <b>603</b> | <b>53</b> | <b>1</b> | <b>80</b>                      | <b>220</b> | <b>107</b> | <b>8</b> | <b>86</b>                            | <b>592</b> | <b>102</b> | <b>2</b> | <b>22</b>                      | <b>206</b> | <b>85</b> | <b>1</b> | <b>2203</b> |
| Apprch %           | 5.1                                  | 87.1       | 7.7       | 0.1      | 19.3                           | 53         | 25.8       | 1.9      | 11                                   | 75.7       | 13         | 0.3      | 7                              | 65.6       | 27.1      | 0.3      |             |
| Total %            | 1.6                                  | 27.4       | 2.4       | 0        | 3.6                            | 10         | 4.9        | 0.4      | 3.9                                  | 26.9       | 4.6        | 0.1      | 1                              | 9.4        | 3.9       | 0        |             |

| Start Time   | Main Street (Route 28)<br>From North |      |      |      |            | Washington Street<br>From East |      |      |      |            | Main Street (Route 28)<br>From South |      |      |      |            | Washington Street<br>From West |      |      |      |            | Int. Total |
|--|--------------------------------------|------|------|------|------------|--------------------------------|------|------|------|------------|--------------------------------------|------|------|------|------------|--------------------------------|------|------|------|------------|------------|
|  | Right                                | Thru | Left | Peds | App. Total | Right                          | Thru | Left | Peds | App. Total | Right                                | Thru | Left | Peds | App. Total | Right                          | Thru | Left | Peds | App. Total |            |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 |                                      |      |      |      |            |                                |      |      |      |            |                                      |      |      |      |            |                                |      |      |      |            |            |
| Peak Hour for Entire Intersection Begins at 07:45 AM       |                                      |      |      |      |            |                                |      |      |      |            |                                      |      |      |      |            |                                |      |      |      |            |            |
| 07:45 AM   | 3                                    | 82   | 8    | 0    | 93         | 12                             | 46   | 16   | 1    | 75         | 8                                    | 79   | 11   | 1    | 99         | 2                              | 22   | 13   | 0    | 37         | 304        |
| 08:00 AM   | 7                                    | 68   | 3    | 0    | 78         | 12                             | 31   | 15   | 1    | 59         | 12                                   | 99   | 13   | 1    | 125        | 3                              | 18   | 11   | 0    | 32         | 294        |
| 08:15 AM   | 5                                    | 80   | 12   | 0    | 97         | 10                             | 21   | 10   | 2    | 43         | 13                                   | 78   | 12   | 0    | 103        | 5                              | 34   | 13   | 0    | 52         | 295        |
| 08:30 AM   | 2                                    | 85   | 12   | 0    | 99         | 12                             | 24   | 13   | 3    | 52         | 18                                   | 83   | 15   | 0    | 116        | 5                              | 33   | 5    | 0    | 43         | 310        |
| Total Volume   | 17                                   | 315  | 35   | 0    | 367        | 46                             | 122  | 54   | 7    | 229        | 51                                   | 339  | 51   | 2    | 443        | 15                             | 107  | 42   | 0    | 164        | 1203       |
| % App. Total   | 4.6                                  | 85.8 | 9.5  | 0    |            | 20.1                           | 53.3 | 23.6 | 3.1  |            | 11.5                                 | 76.5 | 11.5 | 0.5  |            | 9.1                            | 65.2 | 25.6 | 0    |            |            |
| PHF  | .607                                 | .926 | .729 | .000 | .927       | .958                           | .663 | .844 | .583 | .763       | .708                                 | .856 | .850 | .500 | .886       | .750                           | .787 | .808 | .000 | .788       | .970       |

# Transportation Data Corporation

Mario Perone, mperone1@verizon.net  
tel (781) 587-0086 cell (781) 439-4999

N/S: Main Street (Route 28)  
E/W: Washington Street  
City, State: Reading, MA  
Client: McM/Shana Gare

File Name : 05660A  
Site Code : Y22C2011  
Start Date : 1/4/2023  
Page No : 1

### Groups Printed- Trucks & Buses

| Start Time         | Main Street (Route 28)<br>From North |           |          |          | Washington Street<br>From East |          |          |          | Main Street (Route 28)<br>From South |           |          |          | Washington Street<br>From West |          |          |          | Int. Total |
|--------------------|--------------------------------------|-----------|----------|----------|--------------------------------|----------|----------|----------|--------------------------------------|-----------|----------|----------|--------------------------------|----------|----------|----------|------------|
|                    | Right                                | Thru      | Left     | Peds     | Right                          | Thru     | Left     | Peds     | Right                                | Thru      | Left     | Peds     | Right                          | Thru     | Left     | Peds     |            |
| 07:00 AM           | 0                                    | 0         | 1        | 0        | 0                              | 1        | 1        | 0        | 0                                    | 1         | 1        | 0        | 0                              | 0        | 0        | 0        | 5          |
| 07:15 AM           | 0                                    | 0         | 1        | 0        | 1                              | 1        | 0        | 0        | 0                                    | 1         | 1        | 0        | 0                              | 0        | 0        | 0        | 5          |
| 07:30 AM           | 0                                    | 0         | 1        | 0        | 1                              | 1        | 0        | 0        | 0                                    | 4         | 0        | 0        | 0                              | 1        | 1        | 0        | 9          |
| 07:45 AM           | 0                                    | 3         | 1        | 0        | 1                              | 0        | 0        | 0        | 0                                    | 1         | 0        | 0        | 0                              | 1        | 0        | 0        | 7          |
| <b>Total</b>       | <b>0</b>                             | <b>3</b>  | <b>4</b> | <b>0</b> | <b>3</b>                       | <b>3</b> | <b>1</b> | <b>0</b> | <b>0</b>                             | <b>7</b>  | <b>2</b> | <b>0</b> | <b>0</b>                       | <b>2</b> | <b>1</b> | <b>0</b> | <b>26</b>  |
| 08:00 AM           | 0                                    | 6         | 0        | 0        | 0                              | 0        | 0        | 0        | 0                                    | 0         | 1        | 0        | 0                              | 0        | 0        | 0        | 7          |
| 08:15 AM           | 0                                    | 0         | 1        | 0        | 0                              | 2        | 0        | 0        | 0                                    | 1         | 0        | 0        | 0                              | 0        | 1        | 0        | 5          |
| 08:30 AM           | 0                                    | 1         | 1        | 0        | 0                              | 1        | 0        | 0        | 1                                    | 3         | 0        | 0        | 0                              | 0        | 0        | 0        | 7          |
| 08:45 AM           | 0                                    | 2         | 1        | 0        | 0                              | 1        | 0        | 0        | 0                                    | 0         | 0        | 0        | 0                              | 1        | 1        | 0        | 6          |
| <b>Total</b>       | <b>0</b>                             | <b>9</b>  | <b>3</b> | <b>0</b> | <b>0</b>                       | <b>4</b> | <b>0</b> | <b>0</b> | <b>1</b>                             | <b>4</b>  | <b>1</b> | <b>0</b> | <b>0</b>                       | <b>1</b> | <b>2</b> | <b>0</b> | <b>25</b>  |
| <b>Grand Total</b> | <b>0</b>                             | <b>12</b> | <b>7</b> | <b>0</b> | <b>3</b>                       | <b>7</b> | <b>1</b> | <b>0</b> | <b>1</b>                             | <b>11</b> | <b>3</b> | <b>0</b> | <b>0</b>                       | <b>3</b> | <b>3</b> | <b>0</b> | <b>51</b>  |
| Apprch %           | 0                                    | 63.2      | 36.8     | 0        | 27.3                           | 63.6     | 9.1      | 0        | 6.7                                  | 73.3      | 20       | 0        | 0                              | 50       | 50       | 0        |            |
| Total %            | 0                                    | 23.5      | 13.7     | 0        | 5.9                            | 13.7     | 2        | 0        | 2                                    | 21.6      | 5.9      | 0        | 0                              | 5.9      | 5.9      | 0        |            |

| Start Time   | Main Street (Route 28)<br>From North |      |      |      |            | Washington Street<br>From East |      |      |      |            | Main Street (Route 28)<br>From South |      |      |      |            | Washington Street<br>From West |      |      |      |            | Int. Total |
|--|--------------------------------------|------|------|------|------------|--------------------------------|------|------|------|------------|--------------------------------------|------|------|------|------------|--------------------------------|------|------|------|------------|------------|
|  | Right                                | Thru | Left | Peds | App. Total | Right                          | Thru | Left | Peds | App. Total | Right                                | Thru | Left | Peds | App. Total | Right                          | Thru | Left | Peds | App. Total |            |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 |                                      |      |      |      |            |                                |      |      |      |            |                                      |      |      |      |            |                                |      |      |      |            |            |
| Peak Hour for Entire Intersection Begins at 07:15 AM       |                                      |      |      |      |            |                                |      |      |      |            |                                      |      |      |      |            |                                |      |      |      |            |            |
| 07:15 AM   | 0                                    | 0    | 1    | 0    | 1          | 1                              | 1    | 0    | 0    | 2          | 0                                    | 1    | 1    | 0    | 2          | 0                              | 0    | 0    | 0    | 0          | 5          |
| 07:30 AM   | 0                                    | 0    | 1    | 0    | 1          | 1                              | 1    | 0    | 0    | 2          | 0                                    | 4    | 0    | 0    | 4          | 0                              | 1    | 1    | 0    | 2          | 9          |
| 07:45 AM   | 0                                    | 3    | 1    | 0    | 4          | 1                              | 0    | 0    | 0    | 1          | 0                                    | 1    | 0    | 0    | 1          | 0                              | 1    | 0    | 0    | 1          | 7          |
| 08:00 AM   | 0                                    | 6    | 0    | 0    | 6          | 0                              | 0    | 0    | 0    | 0          | 0                                    | 0    | 1    | 0    | 1          | 0                              | 0    | 0    | 0    | 0          | 7          |
| Total Volume   | 0                                    | 9    | 3    | 0    | 12         | 3                              | 2    | 0    | 0    | 5          | 0                                    | 6    | 2    | 0    | 8          | 0                              | 2    | 1    | 0    | 3          | 28         |
| % App. Total   | 0                                    | 75   | 25   | 0    |            | 60                             | 40   | 0    | 0    |            | 0                                    | 75   | 25   | 0    |            | 0                              | 66.7 | 33.3 | 0    |            |            |
| PHF  | .000                                 | .375 | .750 | .000 | .500       | .750                           | .500 | .000 | .000 | .625       | .000                                 | .375 | .500 | .000 | .500       | .000                           | .500 | .250 | .000 | .375       | .778       |

# Transportation Data Corporation

Mario Perone, mperone1@verizon.net  
tel (781) 587-0086 cell (781) 439-4999

N/S: Main Street (Route 28)  
E/W: Washington Street  
City, State: Reading, MA  
Client: McM/Shana Gare

File Name : 05660A  
Site Code : Y22C2011  
Start Date : 1/4/2023  
Page No : 1

### Groups Printed- Bikes by Direction

| Start Time         | Main Street (Route 28)<br>From North |      |      |      | Washington Street<br>From East |      |      |      | Main Street (Route 28)<br>From South |      |      |      | Washington Street<br>From West |      |      |      | Int. Total |
|--------------------|--------------------------------------|------|------|------|--------------------------------|------|------|------|--------------------------------------|------|------|------|--------------------------------|------|------|------|------------|
|                    | Right                                | Thru | Left | Peds | Right                          | Thru | Left | Peds | Right                                | Thru | Left | Peds | Right                          | Thru | Left | Peds |            |
| 07:00 AM           | 0                                    | 0    | 0    | 0    | 0                              | 0    | 0    | 0    | 0                                    | 0    | 0    | 0    | 0                              | 0    | 0    | 0    | 0          |
| 07:15 AM           | 0                                    | 0    | 0    | 0    | 0                              | 0    | 0    | 0    | 0                                    | 0    | 0    | 0    | 0                              | 0    | 0    | 0    | 0          |
| 07:30 AM           | 0                                    | 0    | 0    | 0    | 0                              | 0    | 0    | 0    | 0                                    | 0    | 0    | 0    | 0                              | 0    | 0    | 0    | 0          |
| 07:45 AM           | 0                                    | 0    | 0    | 0    | 0                              | 0    | 0    | 0    | 0                                    | 0    | 0    | 0    | 0                              | 0    | 0    | 0    | 0          |
| <b>Total</b>       | 0                                    | 0    | 0    | 0    | 0                              | 0    | 0    | 0    | 0                                    | 0    | 0    | 0    | 0                              | 0    | 0    | 0    | 0          |
| 08:00 AM           | 0                                    | 0    | 0    | 0    | 0                              | 0    | 0    | 0    | 0                                    | 0    | 0    | 0    | 0                              | 0    | 0    | 0    | 0          |
| 08:15 AM           | 0                                    | 0    | 0    | 0    | 0                              | 0    | 0    | 0    | 0                                    | 1    | 0    | 0    | 0                              | 0    | 0    | 0    | 1          |
| 08:30 AM           | 0                                    | 0    | 0    | 0    | 0                              | 0    | 0    | 0    | 0                                    | 0    | 0    | 0    | 0                              | 0    | 0    | 0    | 0          |
| 08:45 AM           | 0                                    | 0    | 0    | 0    | 0                              | 0    | 0    | 0    | 0                                    | 0    | 0    | 0    | 0                              | 0    | 0    | 0    | 0          |
| <b>Total</b>       | 0                                    | 0    | 0    | 0    | 0                              | 0    | 0    | 0    | 0                                    | 1    | 0    | 0    | 0                              | 0    | 0    | 0    | 1          |
| <b>Grand Total</b> | 0                                    | 0    | 0    | 0    | 0                              | 0    | 0    | 0    | 0                                    | 1    | 0    | 0    | 0                              | 0    | 0    | 0    | 1          |
| Apprch %           | 0                                    | 0    | 0    | 0    | 0                              | 0    | 0    | 0    | 0                                    | 100  | 0    | 0    | 0                              | 0    | 0    | 0    |            |
| Total %            | 0                                    | 0    | 0    | 0    | 0                              | 0    | 0    | 0    | 0                                    | 100  | 0    | 0    | 0                              | 0    | 0    | 0    |            |

| Start Time   | Main Street (Route 28)<br>From North |      |      |      |            | Washington Street<br>From East |      |      |      |            | Main Street (Route 28)<br>From South |      |      |      |            | Washington Street<br>From West |      |      |      |            | Int. Total |
|--|--------------------------------------|------|------|------|------------|--------------------------------|------|------|------|------------|--------------------------------------|------|------|------|------------|--------------------------------|------|------|------|------------|------------|
|  | Right                                | Thru | Left | Peds | App. Total | Right                          | Thru | Left | Peds | App. Total | Right                                | Thru | Left | Peds | App. Total | Right                          | Thru | Left | Peds | App. Total |            |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 |                                      |      |      |      |            |                                |      |      |      |            |                                      |      |      |      |            |                                |      |      |      |            |            |
| Peak Hour for Entire Intersection Begins at 07:30 AM       |                                      |      |      |      |            |                                |      |      |      |            |                                      |      |      |      |            |                                |      |      |      |            |            |
| 07:30 AM   | 0                                    | 0    | 0    | 0    | 0          | 0                              | 0    | 0    | 0    | 0          | 0                                    | 0    | 0    | 0    | 0          | 0                              | 0    | 0    | 0    | 0          | 0          |
| 07:45 AM   | 0                                    | 0    | 0    | 0    | 0          | 0                              | 0    | 0    | 0    | 0          | 0                                    | 0    | 0    | 0    | 0          | 0                              | 0    | 0    | 0    | 0          | 0          |
| 08:00 AM   | 0                                    | 0    | 0    | 0    | 0          | 0                              | 0    | 0    | 0    | 0          | 0                                    | 0    | 0    | 0    | 0          | 0                              | 0    | 0    | 0    | 0          | 0          |
| 08:15 AM   | 0                                    | 0    | 0    | 0    | 0          | 0                              | 0    | 0    | 0    | 0          | 0                                    | 1    | 0    | 0    | 1          | 0                              | 0    | 0    | 0    | 0          | 1          |
| Total Volume   | 0                                    | 0    | 0    | 0    | 0          | 0                              | 0    | 0    | 0    | 0          | 0                                    | 1    | 0    | 0    | 1          | 0                              | 0    | 0    | 0    | 0          | 1          |
| % App. Total   | 0                                    | 0    | 0    | 0    | 0          | 0                              | 0    | 0    | 0    | 0          | 0                                    | 100  | 0    | 0    | 100        | 0                              | 0    | 0    | 0    | 0          | 100        |
| PHF  | .000                                 | .000 | .000 | .000 | .000       | .000                           | .000 | .000 | .000 | .000       | .000                                 | .250 | .000 | .000 | .250       | .000                           | .000 | .000 | .000 | .000       | .250       |



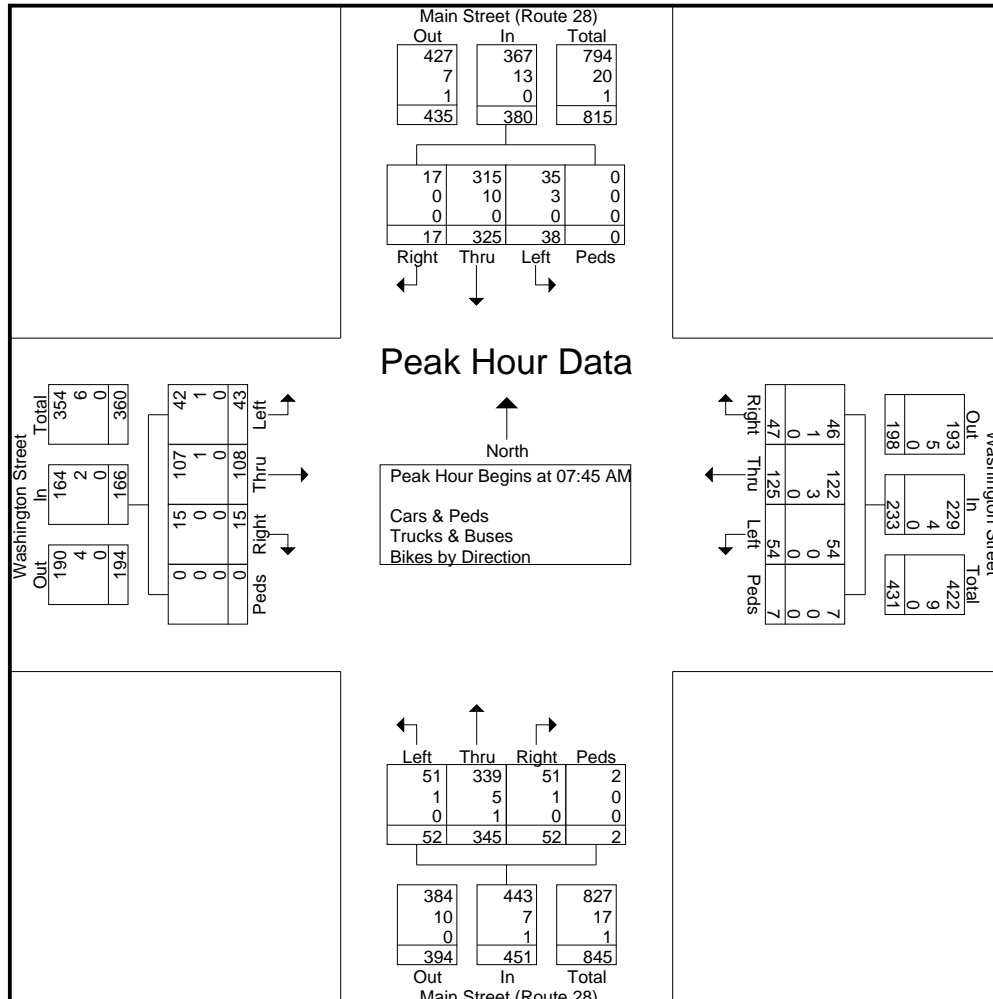
# Transportation Data Corporation

Mario Perone, [mperone1@verizon.net](mailto:mperone1@verizon.net)  
tel (781) 587-0086 cell (781) 439-4999

N/S: Main Street (Route 28)  
E/W: Washington Street  
City, State: Reading, MA  
Client: McM/Shana Gare

File Name : 05660A  
Site Code : Y22C2011  
Start Date : 1/4/2023  
Page No : 1

| Start Time   | Main Street (Route 28)<br>From North |      |      |      |            | Washington Street<br>From East |      |      |      |            | Main Street (Route 28)<br>From South |      |      |      |            | Washington Street<br>From West |      |      |      |            | Int. Total |
|--|--------------------------------------|------|------|------|------------|--------------------------------|------|------|------|------------|--------------------------------------|------|------|------|------------|--------------------------------|------|------|------|------------|------------|
|  | Right                                | Thru | Left | Peds | App. Total | Right                          | Thru | Left | Peds | App. Total | Right                                | Thru | Left | Peds | App. Total | Right                          | Thru | Left | Peds | App. Total |            |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 |                                      |      |      |      |            |                                |      |      |      |            |                                      |      |      |      |            |                                |      |      |      |            |            |
| Peak Hour for Entire Intersection Begins at 07:45 AM       |                                      |      |      |      |            |                                |      |      |      |            |                                      |      |      |      |            |                                |      |      |      |            |            |
| 07:45 AM   | 3                                    | 85   | 9    | 0    | 97         | 13                             | 46   | 16   | 1    | 76         | 8                                    | 80   | 11   | 1    | 100        | 2                              | 23   | 13   | 0    | 38         | 311        |
| 08:00 AM   | 7                                    | 74   | 3    | 0    | 84         | 12                             | 31   | 15   | 1    | 59         | 12                                   | 99   | 14   | 1    | 126        | 3                              | 18   | 11   | 0    | 32         | 301        |
| 08:15 AM   | 5                                    | 80   | 13   | 0    | 98         | 10                             | 23   | 10   | 2    | 45         | 13                                   | 80   | 12   | 0    | 105        | 5                              | 34   | 14   | 0    | 53         | 301        |
| 08:30 AM   | 2                                    | 86   | 13   | 0    | 101        | 12                             | 25   | 13   | 3    | 53         | 19                                   | 86   | 15   | 0    | 120        | 5                              | 33   | 5    | 0    | 43         | 317        |
| Total Volume   | 17                                   | 325  | 38   | 0    | 380        | 47                             | 125  | 54   | 7    | 233        | 52                                   | 345  | 52   | 2    | 451        | 15                             | 108  | 43   | 0    | 166        | 1230       |
| % App. Total   | 4.5                                  | 85.5 | 10   | 0    |            | 20.2                           | 53.6 | 23.2 | 3    |            | 11.5                                 | 76.5 | 11.5 | 0.4  |            | 9                              | 65.1 | 25.9 | 0    |            |            |
| PHF  | .607                                 | .945 | .731 | .000 | .941       | .904                           | .679 | .844 | .583 | .766       | .684                                 | .871 | .867 | .500 | .895       | .750                           | .794 | .768 | .000 | .783       | .970       |
| Cars & Peds  | 17                                   | 315  | 35   | 0    | 367        | 46                             | 122  | 54   | 7    | 229        | 51                                   | 339  | 51   | 2    | 443        | 15                             | 107  | 42   | 0    | 164        | 1203       |
| % Cars & Peds  | 100                                  | 96.9 | 92.1 | 0    | 96.6       | 97.9                           | 97.6 | 100  | 100  | 98.3       | 98.1                                 | 98.3 | 98.1 | 100  | 98.2       | 100                            | 99.1 | 97.7 | 0    | 98.8       | 97.8       |
| Trucks & Buses   | 0                                    | 10   | 3    | 0    | 13         | 1                              | 3    | 0    | 0    | 4          | 1                                    | 5    | 1    | 0    | 7          | 0                              | 1    | 1    | 0    | 2          | 26         |
| % Trucks & Buses   | 0                                    | 3.1  | 7.9  | 0    | 3.4        | 2.1                            | 2.4  | 0    | 0    | 1.7        | 1.9                                  | 1.4  | 1.9  | 0    | 1.6        | 0                              | 0.9  | 2.3  | 0    | 1.2        | 2.1        |
| Bikes by Direction   | 0                                    | 0    | 0    | 0    | 0          | 0                              | 0    | 0    | 0    | 0          | 0                                    | 1    | 0    | 0    | 1          | 0                              | 0    | 0    | 0    | 0          | 1          |
| % Bikes by Direction                                       | 0                                    | 0    | 0    | 0    | 0          | 0                              | 0    | 0    | 0    | 0          | 0                                    | 0.3  | 0    | 0    | 0.2        | 0                              | 0    | 0    | 0    | 0          | 0.1        |



**Transportation Data Corporation**  
 Mario Perone, mperone1@verizon.net  
 tel (781) 587-0086 cell (781) 439-4999

N/S: Main Street (Route 28)  
 E/W: Washington Street  
 City, State: Reading, MA  
 Client: McM/Shana Gare

File Name : 05660A  
 Site Code : Y22C2011  
 Start Date : 1/4/2023  
 Page No : 1

Groups Printed- Cars & Peds - Trucks & Buses - Bikes by Direction

| Start Time           | Main Street (Route 28)<br>From North |            |           |          | Washington Street<br>From East |            |            |          | Main Street (Route 28)<br>From South |            |            |          | Washington Street<br>From West |            |           |          | Int. Total  |
|----------------------|--------------------------------------|------------|-----------|----------|--------------------------------|------------|------------|----------|--------------------------------------|------------|------------|----------|--------------------------------|------------|-----------|----------|-------------|
|                      | Right                                | Thru       | Left      | Peds     | Right                          | Thru       | Left       | Peds     | Right                                | Thru       | Left       | Peds     | Right                          | Thru       | Left      | Peds     |             |
| 07:00 AM             | 2                                    | 82         | 5         | 0        | 8                              | 17         | 16         | 1        | 10                                   | 49         | 9          | 0        | 1                              | 23         | 6         | 0        | 229         |
| 07:15 AM             | 3                                    | 71         | 6         | 1        | 11                             | 38         | 16         | 0        | 7                                    | 58         | 14         | 0        | 2                              | 32         | 6         | 0        | 265         |
| 07:30 AM             | 6                                    | 72         | 4         | 0        | 11                             | 33         | 12         | 0        | 11                                   | 73         | 15         | 0        | 2                              | 28         | 17        | 1        | 285         |
| 07:45 AM             | 3                                    | 85         | 9         | 0        | 13                             | 46         | 16         | 1        | 8                                    | 80         | 11         | 1        | 2                              | 23         | 13        | 0        | 311         |
| <b>Total</b>         | <b>14</b>                            | <b>310</b> | <b>24</b> | <b>1</b> | <b>43</b>                      | <b>134</b> | <b>60</b>  | <b>2</b> | <b>36</b>                            | <b>260</b> | <b>49</b>  | <b>1</b> | <b>7</b>                       | <b>106</b> | <b>42</b> | <b>1</b> | <b>1090</b> |
| 08:00 AM             | 7                                    | 74         | 3         | 0        | 12                             | 31         | 15         | 1        | 12                                   | 99         | 14         | 1        | 3                              | 18         | 11        | 0        | 301         |
| 08:15 AM             | 5                                    | 80         | 13        | 0        | 10                             | 23         | 10         | 2        | 13                                   | 80         | 12         | 0        | 5                              | 34         | 14        | 0        | 301         |
| 08:30 AM             | 2                                    | 86         | 13        | 0        | 12                             | 25         | 13         | 3        | 19                                   | 86         | 15         | 0        | 5                              | 33         | 5         | 0        | 317         |
| 08:45 AM             | 7                                    | 65         | 7         | 0        | 6                              | 14         | 10         | 0        | 7                                    | 79         | 15         | 0        | 2                              | 18         | 16        | 0        | 246         |
| <b>Total</b>         | <b>21</b>                            | <b>305</b> | <b>36</b> | <b>0</b> | <b>40</b>                      | <b>93</b>  | <b>48</b>  | <b>6</b> | <b>51</b>                            | <b>344</b> | <b>56</b>  | <b>1</b> | <b>15</b>                      | <b>103</b> | <b>46</b> | <b>0</b> | <b>1165</b> |
| <b>Grand Total</b>   | <b>35</b>                            | <b>615</b> | <b>60</b> | <b>1</b> | <b>83</b>                      | <b>227</b> | <b>108</b> | <b>8</b> | <b>87</b>                            | <b>604</b> | <b>105</b> | <b>2</b> | <b>22</b>                      | <b>209</b> | <b>88</b> | <b>1</b> | <b>2255</b> |
| Apprch %             | 4.9                                  | 86.5       | 8.4       | 0.1      | 19.5                           | 53.3       | 25.4       | 1.9      | 10.9                                 | 75.7       | 13.2       | 0.3      | 6.9                            | 65.3       | 27.5      | 0.3      |             |
| Total %              | 1.6                                  | 27.3       | 2.7       | 0        | 3.7                            | 10.1       | 4.8        | 0.4      | 3.9                                  | 26.8       | 4.7        | 0.1      | 1                              | 9.3        | 3.9       | 0        |             |
| Cars & Peds          | 35                                   | 603        | 53        | 1        | 80                             | 220        | 107        | 8        | 86                                   | 592        | 102        | 2        | 22                             | 206        | 85        | 1        | 2203        |
| % Cars & Peds        | 100                                  | 98         | 88.3      | 100      | 96.4                           | 96.9       | 99.1       | 100      | 98.9                                 | 98         | 97.1       | 100      | 100                            | 98.6       | 96.6      | 100      | 97.7        |
| Trucks & Buses       | 0                                    | 12         | 7         | 0        | 3                              | 7          | 1          | 0        | 1                                    | 11         | 3          | 0        | 0                              | 3          | 3         | 0        | 51          |
| % Trucks & Buses     | 0                                    | 2          | 11.7      | 0        | 3.6                            | 3.1        | 0.9        | 0        | 1.1                                  | 1.8        | 2.9        | 0        | 0                              | 1.4        | 3.4       | 0        | 2.3         |
| Bikes by Direction   | 0                                    | 0          | 0         | 0        | 0                              | 0          | 0          | 0        | 0                                    | 1          | 0          | 0        | 0                              | 0          | 0         | 0        | 1           |
| % Bikes by Direction | 0                                    | 0          | 0         | 0        | 0                              | 0          | 0          | 0        | 0                                    | 0.2        | 0          | 0        | 0                              | 0          | 0         | 0        | 0           |

| Start Time   | Main Street (Route 28)<br>From North |      |      |      |            | Washington Street<br>From East |      |      |      |            | Main Street (Route 28)<br>From South |      |      |      |            | Washington Street<br>From West |      |      |      |            | Int. Total |
|--|--------------------------------------|------|------|------|------------|--------------------------------|------|------|------|------------|--------------------------------------|------|------|------|------------|--------------------------------|------|------|------|------------|------------|
|  | Right                                | Thru | Left | Peds | App. Total | Right                          | Thru | Left | Peds | App. Total | Right                                | Thru | Left | Peds | App. Total | Right                          | Thru | Left | Peds | App. Total |            |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 |                                      |      |      |      |            |                                |      |      |      |            |                                      |      |      |      |            |                                |      |      |      |            |            |
| Peak Hour for Entire Intersection Begins at 07:45 AM       |                                      |      |      |      |            |                                |      |      |      |            |                                      |      |      |      |            |                                |      |      |      |            |            |
| 07:45 AM   | 3                                    | 85   | 9    | 0    | 97         | 13                             | 46   | 16   | 1    | 76         | 8                                    | 80   | 11   | 1    | 100        | 2                              | 23   | 13   | 0    | 38         | 311        |
| 08:00 AM   | 7                                    | 74   | 3    | 0    | 84         | 12                             | 31   | 15   | 1    | 59         | 12                                   | 99   | 14   | 1    | 126        | 3                              | 18   | 11   | 0    | 32         | 301        |
| 08:15 AM   | 5                                    | 80   | 13   | 0    | 98         | 10                             | 23   | 10   | 2    | 45         | 13                                   | 80   | 12   | 0    | 105        | 5                              | 34   | 14   | 0    | 53         | 301        |
| 08:30 AM   | 2                                    | 86   | 13   | 0    | 101        | 12                             | 25   | 13   | 3    | 53         | 19                                   | 86   | 15   | 0    | 120        | 5                              | 33   | 5    | 0    | 43         | 317        |
| Total Volume   | 17                                   | 325  | 38   | 0    | 380        | 47                             | 125  | 54   | 7    | 233        | 52                                   | 345  | 52   | 2    | 451        | 15                             | 108  | 43   | 0    | 166        | 1230       |
| % App. Total   | 4.5                                  | 85.5 | 10   | 0    |            | 20.2                           | 53.6 | 23.2 | 3    |            | 11.5                                 | 76.5 | 11.5 | 0.4  |            | 9                              | 65.1 | 25.9 | 0    |            |            |
| PHF  | .607                                 | .945 | .731 | .000 | .941       | .904                           | .679 | .844 | .583 | .766       | .684                                 | .871 | .867 | .500 | .895       | .750                           | .794 | .768 | .000 | .783       | .970       |
| Cars & Peds  | 17                                   | 315  | 35   | 0    | 367        | 46                             | 122  | 54   | 7    | 229        | 51                                   | 339  | 51   | 2    | 443        | 15                             | 107  | 42   | 0    | 164        | 1203       |
| % Cars & Peds  | 100                                  | 96.9 | 92.1 | 0    | 96.6       | 97.9                           | 97.6 | 100  | 100  | 98.3       | 98.1                                 | 98.3 | 98.1 | 100  | 98.2       | 100                            | 99.1 | 97.7 | 0    | 98.8       | 97.8       |
| Trucks & Buses   | 0                                    | 10   | 3    | 0    | 13         | 1                              | 3    | 0    | 0    | 4          | 1                                    | 5    | 1    | 0    | 7          | 0                              | 1    | 1    | 0    | 2          | 26         |
| % Trucks & Buses   | 0                                    | 3.1  | 7.9  | 0    | 3.4        | 2.1                            | 2.4  | 0    | 0    | 1.7        | 1.9                                  | 1.4  | 1.9  | 0    | 1.6        | 0                              | 0.9  | 2.3  | 0    | 1.2        | 2.1        |
| Bikes by Direction   | 0                                    | 0    | 0    | 0    | 0          | 0                              | 0    | 0    | 0    | 0          | 0                                    | 1    | 0    | 0    | 1          | 0                              | 0    | 0    | 0    | 0          | 1          |
| % Bikes by Direction                                       | 0                                    | 0    | 0    | 0    | 0          | 0                              | 0    | 0    | 0    | 0          | 0                                    | 0.3  | 0    | 0    | 0.2        | 0                              | 0    | 0    | 0    | 0          | 0.1        |

# Transportation Data Corporation

Mario Perone, mperone1@verizon.net

tel (781) 587-0086 cell (781) 439-4999

N/S: Main Street (Route 28)  
 E/W: Washington Street  
 City, State: Reading, MA  
 Client: McM/Shana Gare

File Name : 05660AA  
 Site Code : Y22C2011  
 Start Date : 1/4/2023  
 Page No : 1

### Groups Printed- Cars & Peds

| Start Time         | Main Street (Route 28)<br>From North |            |           |          | Washington Street<br>From East |            |            |           | Main Street (Route 28)<br>From South |            |            |           | Washington Street<br>From West |            |           |          | Int. Total  |
|--------------------|--------------------------------------|------------|-----------|----------|--------------------------------|------------|------------|-----------|--------------------------------------|------------|------------|-----------|--------------------------------|------------|-----------|----------|-------------|
|                    | Right                                | Thru       | Left      | Peds     | Right                          | Thru       | Left       | Peds      | Right                                | Thru       | Left       | Peds      | Right                          | Thru       | Left      | Peds     |             |
| 04:00 PM           | 5                                    | 52         | 17        | 3        | 28                             | 41         | 18         | 8         | 8                                    | 91         | 20         | 5         | 0                              | 40         | 5         | 4        | 345         |
| 04:15 PM           | 2                                    | 53         | 10        | 1        | 13                             | 35         | 13         | 1         | 17                                   | 121        | 41         | 3         | 1                              | 44         | 15        | 0        | 370         |
| 04:30 PM           | 10                                   | 62         | 5         | 1        | 12                             | 29         | 9          | 3         | 13                                   | 114        | 25         | 1         | 4                              | 45         | 12        | 0        | 345         |
| 04:45 PM           | 2                                    | 70         | 7         | 0        | 24                             | 36         | 15         | 0         | 15                                   | 114        | 37         | 2         | 5                              | 40         | 11        | 1        | 379         |
| <b>Total</b>       | <b>19</b>                            | <b>237</b> | <b>39</b> | <b>5</b> | <b>77</b>                      | <b>141</b> | <b>55</b>  | <b>12</b> | <b>53</b>                            | <b>440</b> | <b>123</b> | <b>11</b> | <b>10</b>                      | <b>169</b> | <b>43</b> | <b>5</b> | <b>1439</b> |
| 05:00 PM           | 4                                    | 75         | 9         | 0        | 18                             | 48         | 14         | 2         | 17                                   | 117        | 26         | 1         | 5                              | 43         | 8         | 0        | 387         |
| 05:15 PM           | 5                                    | 70         | 6         | 0        | 16                             | 43         | 13         | 2         | 11                                   | 121        | 33         | 4         | 4                              | 44         | 4         | 0        | 376         |
| 05:30 PM           | 1                                    | 67         | 13        | 0        | 21                             | 57         | 22         | 0         | 10                                   | 132        | 27         | 1         | 5                              | 49         | 16        | 0        | 421         |
| 05:45 PM           | 4                                    | 74         | 13        | 0        | 18                             | 48         | 11         | 8         | 18                                   | 128        | 26         | 3         | 4                              | 35         | 17        | 0        | 407         |
| <b>Total</b>       | <b>14</b>                            | <b>286</b> | <b>41</b> | <b>0</b> | <b>73</b>                      | <b>196</b> | <b>60</b>  | <b>12</b> | <b>56</b>                            | <b>498</b> | <b>112</b> | <b>9</b>  | <b>18</b>                      | <b>171</b> | <b>45</b> | <b>0</b> | <b>1591</b> |
| <b>Grand Total</b> | <b>33</b>                            | <b>523</b> | <b>80</b> | <b>5</b> | <b>150</b>                     | <b>337</b> | <b>115</b> | <b>24</b> | <b>109</b>                           | <b>938</b> | <b>235</b> | <b>20</b> | <b>28</b>                      | <b>340</b> | <b>88</b> | <b>5</b> | <b>3030</b> |
| Apprch %           | 5.1                                  | 81.6       | 12.5      | 0.8      | 24                             | 53.8       | 18.4       | 3.8       | 8.4                                  | 72         | 18         | 1.5       | 6.1                            | 73.8       | 19.1      | 1.1      |             |
| Total %            | 1.1                                  | 17.3       | 2.6       | 0.2      | 5                              | 11.1       | 3.8        | 0.8       | 3.6                                  | 31         | 7.8        | 0.7       | 0.9                            | 11.2       | 2.9       | 0.2      |             |

| Start Time   | Main Street (Route 28)<br>From North |           |           |      |            | Washington Street<br>From East |           |           |          |            | Main Street (Route 28)<br>From South |            |           |          |            | Washington Street<br>From West |           |           |      |            | Int. Total |
|--|--------------------------------------|-----------|-----------|------|------------|--------------------------------|-----------|-----------|----------|------------|--------------------------------------|------------|-----------|----------|------------|--------------------------------|-----------|-----------|------|------------|------------|
|  | Right                                | Thru      | Left      | Peds | App. Total | Right                          | Thru      | Left      | Peds     | App. Total | Right                                | Thru       | Left      | Peds     | App. Total | Right                          | Thru      | Left      | Peds | App. Total |            |
| Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1 |                                      |           |           |      |            |                                |           |           |          |            |                                      |            |           |          |            |                                |           |           |      |            |            |
| Peak Hour for Entire Intersection Begins at 05:00 PM       |                                      |           |           |      |            |                                |           |           |          |            |                                      |            |           |          |            |                                |           |           |      |            |            |
| 05:00 PM   | 4                                    | <b>75</b> | 9         | 0    | 88         | 18                             | 48        | 14        | 2        | 82         | 17                                   | 117        | 26        | 1        | 161        | <b>5</b>                       | 43        | 8         | 0    | 56         | 387        |
| 05:15 PM   | <b>5</b>                             | 70        | 6         | 0    | 81         | 16                             | 43        | 13        | 2        | 74         | 11                                   | 121        | <b>33</b> | <b>4</b> | 169        | 4                              | 44        | 4         | 0    | 52         | 376        |
| 05:30 PM   | 1                                    | 67        | <b>13</b> | 0    | 81         | <b>21</b>                      | <b>57</b> | <b>22</b> | 0        | <b>100</b> | 10                                   | <b>132</b> | 27        | 1        | 170        | 5                              | <b>49</b> | 16        | 0    | <b>70</b>  | <b>421</b> |
| 05:45 PM   | 4                                    | 74        | 13        | 0    | <b>91</b>  | 18                             | 48        | 11        | <b>8</b> | 85         | <b>18</b>                            | 128        | 26        | 3        | <b>175</b> | 4                              | 35        | <b>17</b> | 0    | 56         | 407        |
| Total Volume   | 14                                   | 286       | 41        | 0    | 341        | 73                             | 196       | 60        | 12       | 341        | 56                                   | 498        | 112       | 9        | 675        | 18                             | 171       | 45        | 0    | 234        | 1591       |
| % App. Total   | 4.1                                  | 83.9      | 12        | 0    |            | 21.4                           | 57.5      | 17.6      | 3.5      |            | 8.3                                  | 73.8       | 16.6      | 1.3      |            | 7.7                            | 73.1      | 19.2      | 0    |            |            |
| PHF  | .700                                 | .953      | .788      | .000 | .937       | .869                           | .860      | .682      | .375     | .853       | .778                                 | .943       | .848      | .563     | .964       | .900                           | .872      | .662      | .000 | .836       | .945       |



# Transportation Data Corporation

Mario Perone, mperone1@verizon.net

tel (781) 587-0086 cell (781) 439-4999

N/S: Main Street (Route 28)  
 E/W: Washington Street  
 City, State: Reading, MA  
 Client: McM/Shana Gare

File Name : 05660AA  
 Site Code : Y22C2011  
 Start Date : 1/4/2023  
 Page No : 1

### Groups Printed- Trucks & Buses

| Start Time         | Main Street (Route 28)<br>From North |      |      |      | Washington Street<br>From East |      |      |      | Main Street (Route 28)<br>From South |      |      |      | Washington Street<br>From West |      |      |      | Int. Total |
|--------------------|--------------------------------------|------|------|------|--------------------------------|------|------|------|--------------------------------------|------|------|------|--------------------------------|------|------|------|------------|
|                    | Right                                | Thru | Left | Peds | Right                          | Thru | Left | Peds | Right                                | Thru | Left | Peds | Right                          | Thru | Left | Peds |            |
| 04:00 PM           | 0                                    | 0    | 1    | 0    | 0                              | 0    | 0    | 0    | 0                                    | 0    | 0    | 0    | 0                              | 1    | 0    | 0    | 2          |
| 04:15 PM           | 0                                    | 0    | 1    | 0    | 0                              | 0    | 0    | 0    | 0                                    | 0    | 0    | 0    | 1                              | 0    | 0    | 0    | 2          |
| 04:30 PM           | 0                                    | 0    | 1    | 0    | 0                              | 0    | 0    | 0    | 0                                    | 0    | 0    | 0    | 0                              | 0    | 0    | 0    | 1          |
| 04:45 PM           | 0                                    | 0    | 1    | 0    | 0                              | 0    | 0    | 0    | 0                                    | 0    | 0    | 0    | 0                              | 0    | 0    | 0    | 1          |
| <b>Total</b>       | 0                                    | 0    | 4    | 0    | 0                              | 0    | 0    | 0    | 0                                    | 0    | 0    | 0    | 1                              | 1    | 0    | 0    | 6          |
| 05:00 PM           | 0                                    | 0    | 1    | 0    | 1                              | 0    | 0    | 0    | 0                                    | 0    | 0    | 0    | 0                              | 0    | 0    | 0    | 2          |
| 05:15 PM           | 0                                    | 1    | 0    | 0    | 0                              | 0    | 0    | 0    | 0                                    | 0    | 0    | 0    | 0                              | 0    | 0    | 0    | 1          |
| 05:30 PM           | 0                                    | 1    | 1    | 0    | 0                              | 0    | 0    | 0    | 0                                    | 0    | 0    | 0    | 0                              | 0    | 0    | 0    | 2          |
| 05:45 PM           | 0                                    | 1    | 1    | 0    | 0                              | 0    | 0    | 0    | 0                                    | 0    | 0    | 0    | 0                              | 1    | 0    | 0    | 3          |
| <b>Total</b>       | 0                                    | 3    | 3    | 0    | 1                              | 0    | 0    | 0    | 0                                    | 0    | 0    | 0    | 0                              | 1    | 0    | 0    | 8          |
| <b>Grand Total</b> | 0                                    | 3    | 7    | 0    | 1                              | 0    | 0    | 0    | 0                                    | 0    | 0    | 0    | 1                              | 2    | 0    | 0    | 14         |
| Apprch %           | 0                                    | 30   | 70   | 0    | 100                            | 0    | 0    | 0    | 0                                    | 0    | 0    | 0    | 33.3                           | 66.7 | 0    | 0    |            |
| Total %            | 0                                    | 21.4 | 50   | 0    | 7.1                            | 0    | 0    | 0    | 0                                    | 0    | 0    | 0    | 7.1                            | 14.3 | 0    | 0    |            |

| Start Time   | Main Street (Route 28)<br>From North |      |      |      |            | Washington Street<br>From East |      |      |      |            | Main Street (Route 28)<br>From South |      |      |      |            | Washington Street<br>From West |      |      |      |            | Int. Total |      |
|--|--------------------------------------|------|------|------|------------|--------------------------------|------|------|------|------------|--------------------------------------|------|------|------|------------|--------------------------------|------|------|------|------------|------------|------|
|  | Right                                | Thru | Left | Peds | App. Total | Right                          | Thru | Left | Peds | App. Total | Right                                | Thru | Left | Peds | App. Total | Right                          | Thru | Left | Peds | App. Total |            |      |
| Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1 |                                      |      |      |      |            |                                |      |      |      |            |                                      |      |      |      |            |                                |      |      |      |            |            |      |
| Peak Hour for Entire Intersection Begins at 05:00 PM       |                                      |      |      |      |            |                                |      |      |      |            |                                      |      |      |      |            |                                |      |      |      |            |            |      |
| 05:00 PM   | 0                                    | 0    | 1    | 0    | 1          | 1                              | 0    | 0    | 0    | 1          | 0                                    | 0    | 0    | 0    | 0          | 0                              | 0    | 0    | 0    | 0          | 0          | 2    |
| 05:15 PM   | 0                                    | 1    | 0    | 0    | 1          | 0                              | 0    | 0    | 0    | 0          | 0                                    | 0    | 0    | 0    | 0          | 0                              | 0    | 0    | 0    | 0          | 0          | 1    |
| 05:30 PM   | 0                                    | 1    | 1    | 0    | 2          | 0                              | 0    | 0    | 0    | 0          | 0                                    | 0    | 0    | 0    | 0          | 0                              | 0    | 0    | 0    | 0          | 0          | 2    |
| 05:45 PM   | 0                                    | 1    | 1    | 0    | 2          | 0                              | 0    | 0    | 0    | 0          | 0                                    | 0    | 0    | 0    | 0          | 0                              | 1    | 0    | 0    | 1          | 0          | 3    |
| Total Volume   | 0                                    | 3    | 3    | 0    | 6          | 1                              | 0    | 0    | 0    | 1          | 0                                    | 0    | 0    | 0    | 0          | 0                              | 1    | 0    | 0    | 1          | 0          | 8    |
| % App. Total   | 0                                    | 50   | 50   | 0    |            | 100                            | 0    | 0    | 0    |            | 0                                    | 0    | 0    | 0    |            | 0                              | 100  | 0    | 0    |            |            |      |
| PHF  | .000                                 | .750 | .750 | .000 | .750       | .250                           | .000 | .000 | .000 | .250       | .000                                 | .000 | .000 | .000 | .000       | .000                           | .250 | .000 | .000 | .250       |            | .667 |

# Transportation Data Corporation

Mario Perone, mperone1@verizon.net  
tel (781) 587-0086 cell (781) 439-4999

N/S: Main Street (Route 28)  
E/W: Washington Street  
City, State: Reading, MA  
Client: McM/Shana Gare

File Name : 05660AA  
Site Code : Y22C2011  
Start Date : 1/4/2023  
Page No : 1

### Groups Printed- Bikes by Direction

| Start Time         | Main Street (Route 28)<br>From North |      |      |      | Washington Street<br>From East |      |      |      | Main Street (Route 28)<br>From South |      |      |      | Washington Street<br>From West |      |      |      | Int. Total |
|--------------------|--------------------------------------|------|------|------|--------------------------------|------|------|------|--------------------------------------|------|------|------|--------------------------------|------|------|------|------------|
|                    | Right                                | Thru | Left | Peds | Right                          | Thru | Left | Peds | Right                                | Thru | Left | Peds | Right                          | Thru | Left | Peds |            |
| 04:00 PM           | 0                                    | 0    | 0    | 0    | 0                              | 0    | 0    | 0    | 0                                    | 0    | 0    | 0    | 0                              | 0    | 0    | 0    | 0          |
| 04:15 PM           | 0                                    | 0    | 0    | 0    | 0                              | 0    | 0    | 0    | 0                                    | 0    | 0    | 0    | 0                              | 0    | 0    | 0    | 0          |
| 04:30 PM           | 0                                    | 0    | 0    | 0    | 0                              | 1    | 0    | 0    | 0                                    | 0    | 0    | 0    | 0                              | 0    | 0    | 0    | 1          |
| 04:45 PM           | 0                                    | 0    | 0    | 0    | 0                              | 0    | 0    | 0    | 0                                    | 0    | 0    | 0    | 0                              | 0    | 0    | 0    | 0          |
| <b>Total</b>       | 0                                    | 0    | 0    | 0    | 0                              | 1    | 0    | 0    | 0                                    | 0    | 0    | 0    | 0                              | 0    | 0    | 0    | 1          |
| 05:00 PM           | 0                                    | 0    | 0    | 0    | 0                              | 0    | 0    | 0    | 0                                    | 0    | 0    | 0    | 0                              | 0    | 0    | 0    | 0          |
| 05:15 PM           | 0                                    | 0    | 0    | 0    | 0                              | 0    | 0    | 0    | 0                                    | 0    | 0    | 0    | 0                              | 0    | 0    | 0    | 0          |
| 05:30 PM           | 0                                    | 0    | 0    | 0    | 0                              | 0    | 0    | 0    | 0                                    | 0    | 0    | 0    | 0                              | 0    | 0    | 0    | 0          |
| 05:45 PM           | 0                                    | 0    | 0    | 0    | 0                              | 0    | 0    | 0    | 0                                    | 0    | 0    | 0    | 0                              | 0    | 0    | 0    | 0          |
| <b>Total</b>       | 0                                    | 0    | 0    | 0    | 0                              | 0    | 0    | 0    | 0                                    | 0    | 0    | 0    | 0                              | 0    | 0    | 0    | 0          |
| <b>Grand Total</b> | 0                                    | 0    | 0    | 0    | 0                              | 1    | 0    | 0    | 0                                    | 0    | 0    | 0    | 0                              | 0    | 0    | 0    | 1          |
| Apprch %           | 0                                    | 0    | 0    | 0    | 0                              | 100  | 0    | 0    | 0                                    | 0    | 0    | 0    | 0                              | 0    | 0    | 0    | 0          |
| Total %            | 0                                    | 0    | 0    | 0    | 0                              | 100  | 0    | 0    | 0                                    | 0    | 0    | 0    | 0                              | 0    | 0    | 0    | 0          |

| Start Time   | Main Street (Route 28)<br>From North |      |      |      |            | Washington Street<br>From East |      |      |      |            | Main Street (Route 28)<br>From South |      |      |      |            | Washington Street<br>From West |      |      |      |            | Int. Total |
|--|--------------------------------------|------|------|------|------------|--------------------------------|------|------|------|------------|--------------------------------------|------|------|------|------------|--------------------------------|------|------|------|------------|------------|
|  | Right                                | Thru | Left | Peds | App. Total | Right                          | Thru | Left | Peds | App. Total | Right                                | Thru | Left | Peds | App. Total | Right                          | Thru | Left | Peds | App. Total |            |
| Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1 |                                      |      |      |      |            |                                |      |      |      |            |                                      |      |      |      |            |                                |      |      |      |            |            |
| Peak Hour for Entire Intersection Begins at 04:00 PM       |                                      |      |      |      |            |                                |      |      |      |            |                                      |      |      |      |            |                                |      |      |      |            |            |
| 04:00 PM   | 0                                    | 0    | 0    | 0    | 0          | 0                              | 0    | 0    | 0    | 0          | 0                                    | 0    | 0    | 0    | 0          | 0                              | 0    | 0    | 0    | 0          | 0          |
| 04:15 PM   | 0                                    | 0    | 0    | 0    | 0          | 0                              | 0    | 0    | 0    | 0          | 0                                    | 0    | 0    | 0    | 0          | 0                              | 0    | 0    | 0    | 0          | 0          |
| 04:30 PM   | 0                                    | 0    | 0    | 0    | 0          | 0                              | 1    | 0    | 0    | 1          | 0                                    | 0    | 0    | 0    | 0          | 0                              | 0    | 0    | 0    | 0          | 1          |
| 04:45 PM   | 0                                    | 0    | 0    | 0    | 0          | 0                              | 0    | 0    | 0    | 0          | 0                                    | 0    | 0    | 0    | 0          | 0                              | 0    | 0    | 0    | 0          | 0          |
| Total Volume   | 0                                    | 0    | 0    | 0    | 0          | 0                              | 1    | 0    | 0    | 1          | 0                                    | 0    | 0    | 0    | 0          | 0                              | 0    | 0    | 0    | 0          | 1          |
| % App. Total   | 0                                    | 0    | 0    | 0    | 0          | 0                              | 100  | 0    | 0    | 100        | 0                                    | 0    | 0    | 0    | 0          | 0                              | 0    | 0    | 0    | 0          | 100        |
| PHF  | .000                                 | .000 | .000 | .000 | .000       | .000                           | .250 | .000 | .000 | .250       | .000                                 | .000 | .000 | .000 | .000       | .000                           | .000 | .000 | .000 | .000       | .250       |

# Transportation Data Corporation

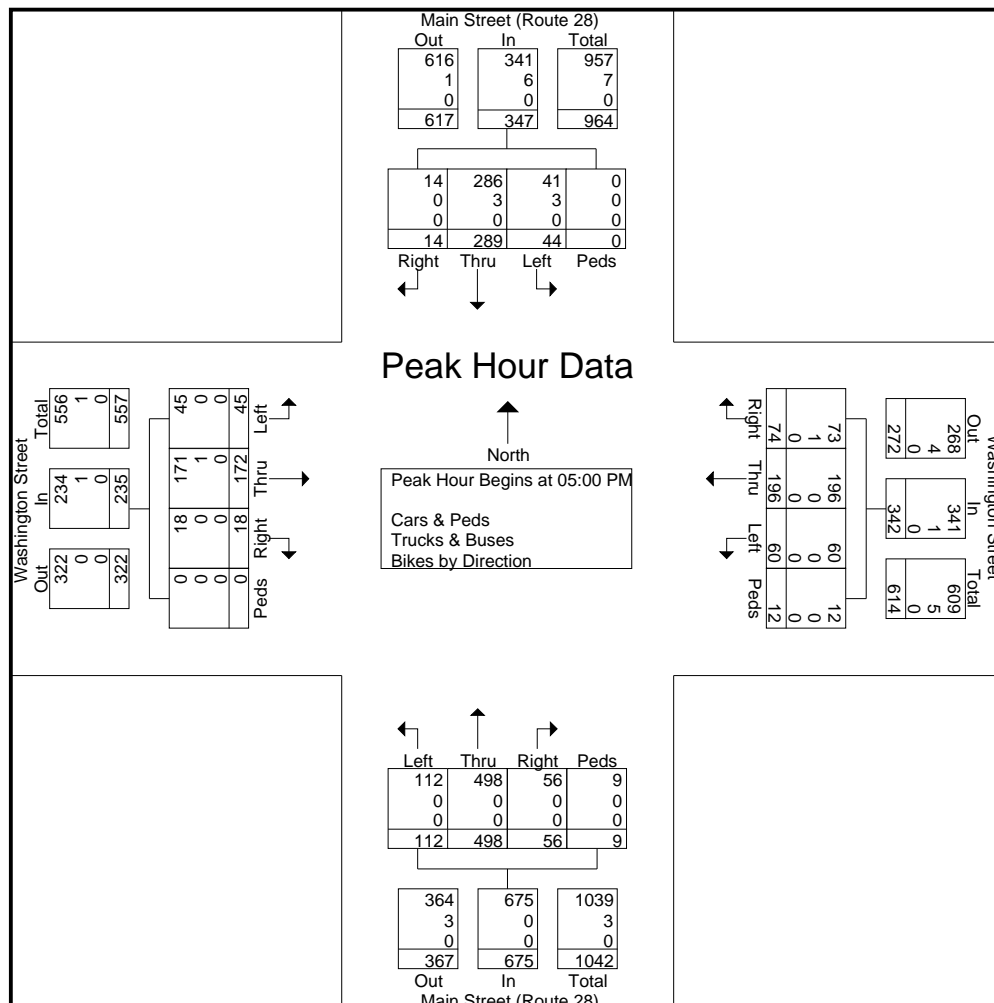
Mario Perone, [mperone1@verizon.net](mailto:mperone1@verizon.net)

tel (781) 587-0086 cell (781) 439-4999

N/S: Main Street (Route 28)  
 E/W: Washington Street  
 City, State: Reading, MA  
 Client: McM/Shana Gare

File Name : 05660AA  
 Site Code : Y22C2011  
 Start Date : 1/4/2023  
 Page No : 1

| Start Time   | Main Street (Route 28)<br>From North |      |      |      |            | Washington Street<br>From East |      |      |      |            | Main Street (Route 28)<br>From South |      |      |      |            | Washington Street<br>From West |      |      |      |            | Int. Total |
|--|--------------------------------------|------|------|------|------------|--------------------------------|------|------|------|------------|--------------------------------------|------|------|------|------------|--------------------------------|------|------|------|------------|------------|
|  | Right                                | Thru | Left | Peds | App. Total | Right                          | Thru | Left | Peds | App. Total | Right                                | Thru | Left | Peds | App. Total | Right                          | Thru | Left | Peds | App. Total |            |
| Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1 |                                      |      |      |      |            |                                |      |      |      |            |                                      |      |      |      |            |                                |      |      |      |            |            |
| Peak Hour for Entire Intersection Begins at 05:00 PM       |                                      |      |      |      |            |                                |      |      |      |            |                                      |      |      |      |            |                                |      |      |      |            |            |
| 05:00 PM   | 4                                    | 75   | 10   | 0    | 89         | 19                             | 48   | 14   | 2    | 83         | 17                                   | 117  | 26   | 1    | 161        | 5                              | 43   | 8    | 0    | 56         | 389        |
| 05:15 PM   | 5                                    | 71   | 6    | 0    | 82         | 16                             | 43   | 13   | 2    | 74         | 11                                   | 121  | 33   | 4    | 169        | 4                              | 44   | 4    | 0    | 52         | 377        |
| 05:30 PM   | 1                                    | 68   | 14   | 0    | 83         | 21                             | 57   | 22   | 0    | 100        | 10                                   | 132  | 27   | 1    | 170        | 5                              | 49   | 16   | 0    | 70         | 423        |
| 05:45 PM   | 4                                    | 75   | 14   | 0    | 93         | 18                             | 48   | 11   | 8    | 85         | 18                                   | 128  | 26   | 3    | 175        | 4                              | 36   | 17   | 0    | 57         | 410        |
| Total Volume   | 14                                   | 289  | 44   | 0    | 347        | 74                             | 196  | 60   | 12   | 342        | 56                                   | 498  | 112  | 9    | 675        | 18                             | 172  | 45   | 0    | 235        | 1599       |
| % App. Total   | 4                                    | 83.3 | 12.7 | 0    |            | 21.6                           | 57.3 | 17.5 | 3.5  |            | 8.3                                  | 73.8 | 16.6 | 1.3  |            | 7.7                            | 73.2 | 19.1 | 0    |            |            |
| PHF  | .700                                 | .963 | .786 | .000 | .933       | .881                           | .860 | .682 | .375 | .855       | .778                                 | .943 | .848 | .563 | .964       | .900                           | .878 | .662 | .000 | .839       | .945       |
| Cars & Peds  | 14                                   | 286  | 41   | 0    | 341        | 73                             | 196  | 60   | 12   | 341        | 56                                   | 498  | 112  | 9    | 675        | 18                             | 171  | 45   | 0    | 234        | 1591       |
| % Cars & Peds  | 100                                  | 99.0 | 93.2 | 0    | 98.3       | 98.6                           | 100  | 100  | 100  | 99.7       | 100                                  | 100  | 100  | 100  | 100        | 100                            | 99.4 | 100  | 0    | 99.6       | 99.5       |
| Trucks & Buses   | 0                                    | 3    | 3    | 0    | 6          | 1                              | 0    | 0    | 0    | 1          | 0                                    | 0    | 0    | 0    | 0          | 0                              | 1    | 0    | 0    | 1          | 8          |
| % Trucks & Buses   | 0                                    | 1.0  | 6.8  | 0    | 1.7        | 1.4                            | 0    | 0    | 0    | 0.3        | 0                                    | 0    | 0    | 0    | 0          | 0                              | 0.6  | 0    | 0    | 0.4        | 0.5        |
| Bikes by Direction   | 0                                    | 0    | 0    | 0    | 0          | 0                              | 0    | 0    | 0    | 0          | 0                                    | 0    | 0    | 0    | 0          | 0                              | 0    | 0    | 0    | 0          | 0          |
| % Bikes by Direction                                       | 0                                    | 0    | 0    | 0    | 0          | 0                              | 0    | 0    | 0    | 0          | 0                                    | 0    | 0    | 0    | 0          | 0                              | 0    | 0    | 0    | 0          | 0          |





**Transportation Data Corporation**  
 Mario Perone, mperone1@verizon.net  
 tel (781) 587-0086 cell (781) 439-4999

N/S: Main Street (Route 28)  
 E/W: Washington Street  
 City, State: Reading, MA  
 Client: McM/Shana Gare

File Name : 05660AA  
 Site Code : Y22C2011  
 Start Date : 1/4/2023  
 Page No : 1

Groups Printed- Cars & Peds - Trucks & Buses - Bikes by Direction

| Start Time           | Main Street (Route 28)<br>From North |            |           |          | Washington Street<br>From East |            |            |           | Main Street (Route 28)<br>From South |            |            |           | Washington Street<br>From West |            |           |          | Int. Total  |
|----------------------|--------------------------------------|------------|-----------|----------|--------------------------------|------------|------------|-----------|--------------------------------------|------------|------------|-----------|--------------------------------|------------|-----------|----------|-------------|
|                      | Right                                | Thru       | Left      | Peds     | Right                          | Thru       | Left       | Peds      | Right                                | Thru       | Left       | Peds      | Right                          | Thru       | Left      | Peds     |             |
| 04:00 PM             | 5                                    | 52         | 18        | 3        | 28                             | 41         | 18         | 8         | 8                                    | 91         | 20         | 5         | 0                              | 41         | 5         | 4        | 347         |
| 04:15 PM             | 2                                    | 53         | 11        | 1        | 13                             | 35         | 13         | 1         | 17                                   | 121        | 41         | 3         | 2                              | 44         | 15        | 0        | 372         |
| 04:30 PM             | 10                                   | 62         | 6         | 1        | 12                             | 30         | 9          | 3         | 13                                   | 114        | 25         | 1         | 4                              | 45         | 12        | 0        | 347         |
| 04:45 PM             | 2                                    | 70         | 8         | 0        | 24                             | 36         | 15         | 0         | 15                                   | 114        | 37         | 2         | 5                              | 40         | 11        | 1        | 380         |
| <b>Total</b>         | <b>19</b>                            | <b>237</b> | <b>43</b> | <b>5</b> | <b>77</b>                      | <b>142</b> | <b>55</b>  | <b>12</b> | <b>53</b>                            | <b>440</b> | <b>123</b> | <b>11</b> | <b>11</b>                      | <b>170</b> | <b>43</b> | <b>5</b> | <b>1446</b> |
| 05:00 PM             | 4                                    | 75         | 10        | 0        | 19                             | 48         | 14         | 2         | 17                                   | 117        | 26         | 1         | 5                              | 43         | 8         | 0        | 389         |
| 05:15 PM             | 5                                    | 71         | 6         | 0        | 16                             | 43         | 13         | 2         | 11                                   | 121        | 33         | 4         | 4                              | 44         | 4         | 0        | 377         |
| 05:30 PM             | 1                                    | 68         | 14        | 0        | 21                             | 57         | 22         | 0         | 10                                   | 132        | 27         | 1         | 5                              | 49         | 16        | 0        | 423         |
| 05:45 PM             | 4                                    | 75         | 14        | 0        | 18                             | 48         | 11         | 8         | 18                                   | 128        | 26         | 3         | 4                              | 36         | 17        | 0        | 410         |
| <b>Total</b>         | <b>14</b>                            | <b>289</b> | <b>44</b> | <b>0</b> | <b>74</b>                      | <b>196</b> | <b>60</b>  | <b>12</b> | <b>56</b>                            | <b>498</b> | <b>112</b> | <b>9</b>  | <b>18</b>                      | <b>172</b> | <b>45</b> | <b>0</b> | <b>1599</b> |
| <b>Grand Total</b>   | <b>33</b>                            | <b>526</b> | <b>87</b> | <b>5</b> | <b>151</b>                     | <b>338</b> | <b>115</b> | <b>24</b> | <b>109</b>                           | <b>938</b> | <b>235</b> | <b>20</b> | <b>29</b>                      | <b>342</b> | <b>88</b> | <b>5</b> | <b>3045</b> |
| Apprch %             | 5.1                                  | 80.8       | 13.4      | 0.8      | 24                             | 53.8       | 18.3       | 3.8       | 8.4                                  | 72         | 18         | 1.5       | 6.2                            | 73.7       | 19        | 1.1      |             |
| Total %              | 1.1                                  | 17.3       | 2.9       | 0.2      | 5                              | 11.1       | 3.8        | 0.8       | 3.6                                  | 30.8       | 7.7        | 0.7       | 1                              | 11.2       | 2.9       | 0.2      |             |
| Cars & Peds          | 33                                   | 523        | 80        | 5        | 150                            | 337        | 115        | 24        | 109                                  | 938        | 235        | 20        | 28                             | 340        | 88        | 5        | 3030        |
| % Cars & Peds        | 100                                  | 99.4       | 92        | 100      | 99.3                           | 99.7       | 100        | 100       | 100                                  | 100        | 100        | 100       | 96.6                           | 99.4       | 100       | 100      | 99.5        |
| Trucks & Buses       | 0                                    | 3          | 7         | 0        | 1                              | 0          | 0          | 0         | 0                                    | 0          | 0          | 0         | 1                              | 2          | 0         | 0        | 14          |
| % Trucks & Buses     | 0                                    | 0.6        | 8         | 0        | 0.7                            | 0          | 0          | 0         | 0                                    | 0          | 0          | 0         | 3.4                            | 0.6        | 0         | 0        | 0.5         |
| Bikes by Direction   | 0                                    | 0          | 0         | 0        | 0                              | 1          | 0          | 0         | 0                                    | 0          | 0          | 0         | 0                              | 0          | 0         | 0        | 1           |
| % Bikes by Direction | 0                                    | 0          | 0         | 0        | 0                              | 0.3        | 0          | 0         | 0                                    | 0          | 0          | 0         | 0                              | 0          | 0         | 0        | 0           |

| Start Time   | Main Street (Route 28)<br>From North |      |      |      |            | Washington Street<br>From East |      |      |      |            | Main Street (Route 28)<br>From South |      |      |      |            | Washington Street<br>From West |      |      |      |            | Int. Total |
|--|--------------------------------------|------|------|------|------------|--------------------------------|------|------|------|------------|--------------------------------------|------|------|------|------------|--------------------------------|------|------|------|------------|------------|
|  | Right                                | Thru | Left | Peds | App. Total | Right                          | Thru | Left | Peds | App. Total | Right                                | Thru | Left | Peds | App. Total | Right                          | Thru | Left | Peds | App. Total |            |
| Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1 |                                      |      |      |      |            |                                |      |      |      |            |                                      |      |      |      |            |                                |      |      |      |            |            |
| Peak Hour for Entire Intersection Begins at 05:00 PM       |                                      |      |      |      |            |                                |      |      |      |            |                                      |      |      |      |            |                                |      |      |      |            |            |
| 05:00 PM   | 4                                    | 75   | 10   | 0    | 89         | 19                             | 48   | 14   | 2    | 83         | 17                                   | 117  | 26   | 1    | 161        | 5                              | 43   | 8    | 0    | 56         | 389        |
| 05:15 PM   | 5                                    | 71   | 6    | 0    | 82         | 16                             | 43   | 13   | 2    | 74         | 11                                   | 121  | 33   | 4    | 169        | 4                              | 44   | 4    | 0    | 52         | 377        |
| 05:30 PM   | 1                                    | 68   | 14   | 0    | 83         | 21                             | 57   | 22   | 0    | 100        | 10                                   | 132  | 27   | 1    | 170        | 5                              | 49   | 16   | 0    | 70         | 423        |
| 05:45 PM   | 4                                    | 75   | 14   | 0    | 93         | 18                             | 48   | 11   | 8    | 85         | 18                                   | 128  | 26   | 3    | 175        | 4                              | 36   | 17   | 0    | 57         | 410        |
| Total Volume   | 14                                   | 289  | 44   | 0    | 347        | 74                             | 196  | 60   | 12   | 342        | 56                                   | 498  | 112  | 9    | 675        | 18                             | 172  | 45   | 0    | 235        | 1599       |
| % App. Total   | 4                                    | 83.3 | 12.7 | 0    |            | 21.6                           | 57.3 | 17.5 | 3.5  |            | 8.3                                  | 73.8 | 16.6 | 1.3  |            | 7.7                            | 73.2 | 19.1 | 0    |            |            |
| PHF  | .700                                 | .963 | .786 | .000 | .933       | .881                           | .860 | .682 | .375 | .855       | .778                                 | .943 | .848 | .563 | .964       | .900                           | .878 | .662 | .000 | .839       | .945       |
| Cars & Peds  | 14                                   | 286  | 41   | 0    | 341        | 73                             | 196  | 60   | 12   | 341        | 56                                   | 498  | 112  | 9    | 675        | 18                             | 171  | 45   | 0    | 234        | 1591       |
| % Cars & Peds  | 100                                  | 99.0 | 93.2 | 0    | 98.3       | 98.6                           | 100  | 100  | 100  | 99.7       | 100                                  | 100  | 100  | 100  | 100        | 100                            | 99.4 | 100  | 0    | 99.6       | 99.5       |
| Trucks & Buses   | 0                                    | 3    | 3    | 0    | 6          | 1                              | 0    | 0    | 0    | 1          | 0                                    | 0    | 0    | 0    | 0          | 0                              | 1    | 0    | 0    | 1          | 8          |
| % Trucks & Buses   | 0                                    | 1.0  | 6.8  | 0    | 1.7        | 1.4                            | 0    | 0    | 0    | 0.3        | 0                                    | 0    | 0    | 0    | 0          | 0                              | 0.6  | 0    | 0    | 0.4        | 0.5        |
| Bikes by Direction   | 0                                    | 0    | 0    | 0    | 0          | 0                              | 0    | 0    | 0    | 0          | 0                                    | 0    | 0    | 0    | 0          | 0                              | 0    | 0    | 0    | 0          | 0          |
| % Bikes by Direction                                       | 0                                    | 0    | 0    | 0    | 0          | 0                              | 0    | 0    | 0    | 0          | 0                                    | 0    | 0    | 0    | 0          | 0                              | 0    | 0    | 0    | 0          | 0          |

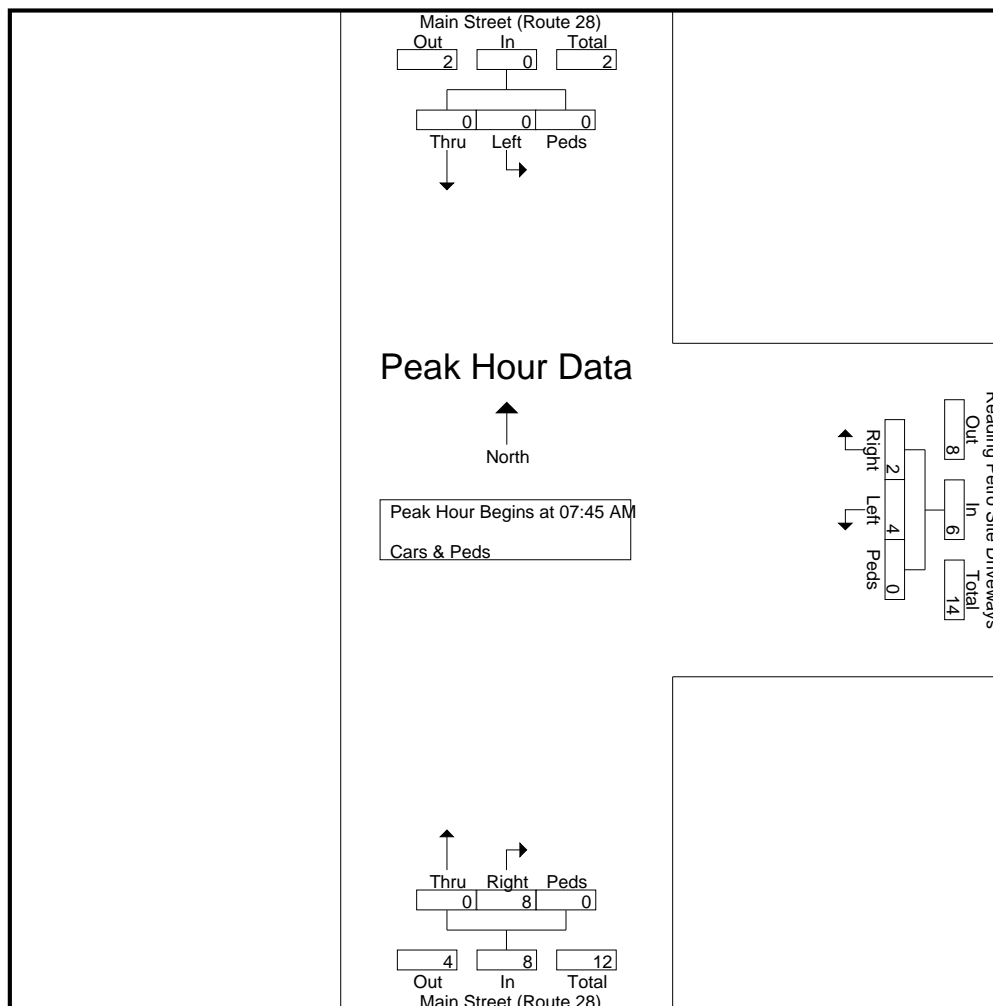
# Transportation Data Corporation

Mario Perone, mperone1@verizon.net  
tel (781) 587-0086 cell (781) 439-4999

N/S: Main Street (Route 28)  
E: Reading Petroleum Site Drives  
City, State: Reading, MA  
Client: McM/Shana Gare

File Name : 05660B  
Site Code : Y22C2011  
Start Date : 1/4/2023  
Page No : 1

| Start Time   | Main Street (Route 28)<br>From North |      |      |            | Reading Petro Site Driveways<br>From East |      |      |            | Main Street (Route 28)<br>From South |      |      |            | Int. Total |
|--|--------------------------------------|------|------|------------|---|------|------|------------|--------------------------------------|------|------|------------|------------|
|  | Thru                                 | Left | Peds | App. Total | Right                                     | Left | Peds | App. Total | Right                                | Thru | Peds | App. Total |            |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 |                                      |      |      |            |   |      |      |            |                                      |      |      |            |            |
| Peak Hour for Entire Intersection Begins at 07:45 AM       |                                      |      |      |            |   |      |      |            |                                      |      |      |            |            |
| 07:45 AM   | 0                                    | 0    | 0    | 0          | 0   | 3    | 0    | 3          | 2                                    | 0    | 0    | 2          | 5          |
| 08:00 AM   | 0                                    | 0    | 0    | 0          | 0   | 0    | 0    | 0          | 2                                    | 0    | 0    | 2          | 2          |
| 08:15 AM   | 0                                    | 0    | 0    | 0          | 0   | 1    | 0    | 1          | 1                                    | 0    | 0    | 1          | 2          |
| 08:30 AM   | 0                                    | 0    | 0    | 0          | 2   | 0    | 0    | 2          | 3                                    | 0    | 0    | 3          | 5          |
| Total Volume   | 0                                    | 0    | 0    | 0          | 2   | 4    | 0    | 6          | 8                                    | 0    | 0    | 8          | 14         |
| % App. Total   | 0                                    | 0    | 0    |            | 33.3                                      | 66.7 | 0    |            | 100                                  | 0    | 0    |            |            |
| PHF  | .000                                 | .000 | .000 | .000       | .250                                      | .333 | .000 | .500       | .667                                 | .000 | .000 | .667       | .700       |



# Transportation Data Corporation

Mario Perone, mperone1@verizon.net  
tel (781) 587-0086 cell (781) 439-4999

N/S: Main Street (Route 28)  
E: Reading Petroleum Site Drives  
City, State: Reading, MA  
Client: McM/Shana Gare

File Name : 05660B  
Site Code : Y22C2011  
Start Date : 1/4/2023  
Page No : 1

### Groups Printed- Cars & Peds

| Start Time         | Main Street (Route 28)<br>From North |          |          | Reading Petro Site Driveways<br>From East |          |          | Main Street (Route 28)<br>From South |          |          | Int. Total |
|--------------------|--------------------------------------|----------|----------|---|----------|----------|--------------------------------------|----------|----------|------------|
|                    | Thru                                 | Left     | Peds     | Right                                     | Left     | Peds     | Right                                | Thru     | Peds     |            |
| 07:00 AM           | 0                                    | 1        | 0        | 0   | 0        | 0        | 1                                    | 0        | 0        | 2          |
| 07:15 AM           | 0                                    | 0        | 0        | 1   | 0        | 0        | 2                                    | 0        | 0        | 3          |
| 07:30 AM           | 0                                    | 0        | 0        | 0   | 0        | 0        | 1                                    | 0        | 0        | 1          |
| 07:45 AM           | 0                                    | 0        | 0        | 0   | 3        | 0        | 2                                    | 0        | 0        | 5          |
| <b>Total</b>       | <b>0</b>                             | <b>1</b> | <b>0</b> | <b>1</b>                                  | <b>3</b> | <b>0</b> | <b>6</b>                             | <b>0</b> | <b>0</b> | <b>11</b>  |
| 08:00 AM           | 0                                    | 0        | 0        | 0   | 0        | 0        | 2                                    | 0        | 0        | 2          |
| 08:15 AM           | 0                                    | 0        | 0        | 0   | 1        | 0        | 1                                    | 0        | 0        | 2          |
| 08:30 AM           | 0                                    | 0        | 0        | 2   | 0        | 0        | 3                                    | 0        | 0        | 5          |
| 08:45 AM           | 0                                    | 0        | 0        | 0   | 2        | 0        | 2                                    | 0        | 0        | 4          |
| <b>Total</b>       | <b>0</b>                             | <b>0</b> | <b>0</b> | <b>2</b>                                  | <b>3</b> | <b>0</b> | <b>8</b>                             | <b>0</b> | <b>0</b> | <b>13</b>  |
| <b>Grand Total</b> | <b>0</b>                             | <b>1</b> | <b>0</b> | <b>3</b>                                  | <b>6</b> | <b>0</b> | <b>14</b>                            | <b>0</b> | <b>0</b> | <b>24</b>  |
| Apprch %           | 0                                    | 100      | 0        | 33.3                                      | 66.7     | 0        | 100                                  | 0        | 0        |            |
| Total %            | 0                                    | 4.2      | 0        | 12.5                                      | 25       | 0        | 58.3                                 | 0        | 0        |            |

| Start Time   | Main Street (Route 28)<br>From North |          |          |            | Reading Petro Site Driveways<br>From East |             |          |             | Main Street (Route 28)<br>From South |          |          |             | Int. Total  |
|--|--------------------------------------|----------|----------|------------|---|-------------|----------|-------------|--------------------------------------|----------|----------|-------------|-------------|
|  | Thru                                 | Left     | Peds     | App. Total | Right                                     | Left        | Peds     | App. Total  | Right                                | Thru     | Peds     | App. Total  |             |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 |                                      |          |          |            |   |             |          |             |                                      |          |          |             |             |
| Peak Hour for Entire Intersection Begins at 07:45 AM       |                                      |          |          |            |   |             |          |             |                                      |          |          |             |             |
| 07:45 AM   | 0                                    | 0        | 0        | 0          | 0   | 3           | 0        | 3           | 2                                    | 0        | 0        | 2           | 5           |
| 08:00 AM   | 0                                    | 0        | 0        | 0          | 0   | 0           | 0        | 0           | 2                                    | 0        | 0        | 2           | 2           |
| 08:15 AM   | 0                                    | 0        | 0        | 0          | 0   | 1           | 0        | 1           | 1                                    | 0        | 0        | 1           | 2           |
| 08:30 AM   | 0                                    | 0        | 0        | 0          | 2   | 0           | 0        | 2           | 3                                    | 0        | 0        | 3           | 5           |
| <b>Total Volume</b>  | <b>0</b>                             | <b>0</b> | <b>0</b> | <b>0</b>   | <b>2</b>                                  | <b>4</b>    | <b>0</b> | <b>6</b>    | <b>8</b>                             | <b>0</b> | <b>0</b> | <b>8</b>    | <b>14</b>   |
| <b>% App. Total</b>  | <b>0</b>                             | <b>0</b> | <b>0</b> | <b>0</b>   | <b>33.3</b>                               | <b>66.7</b> | <b>0</b> | <b>50.0</b> | <b>100</b>                           | <b>0</b> | <b>0</b> | <b>66.7</b> | <b>70.0</b> |
| PHF  | .000                                 | .000     | .000     | .000       | .250                                      | .333        | .000     | .500        | .667                                 | .000     | .000     | .667        | .700        |



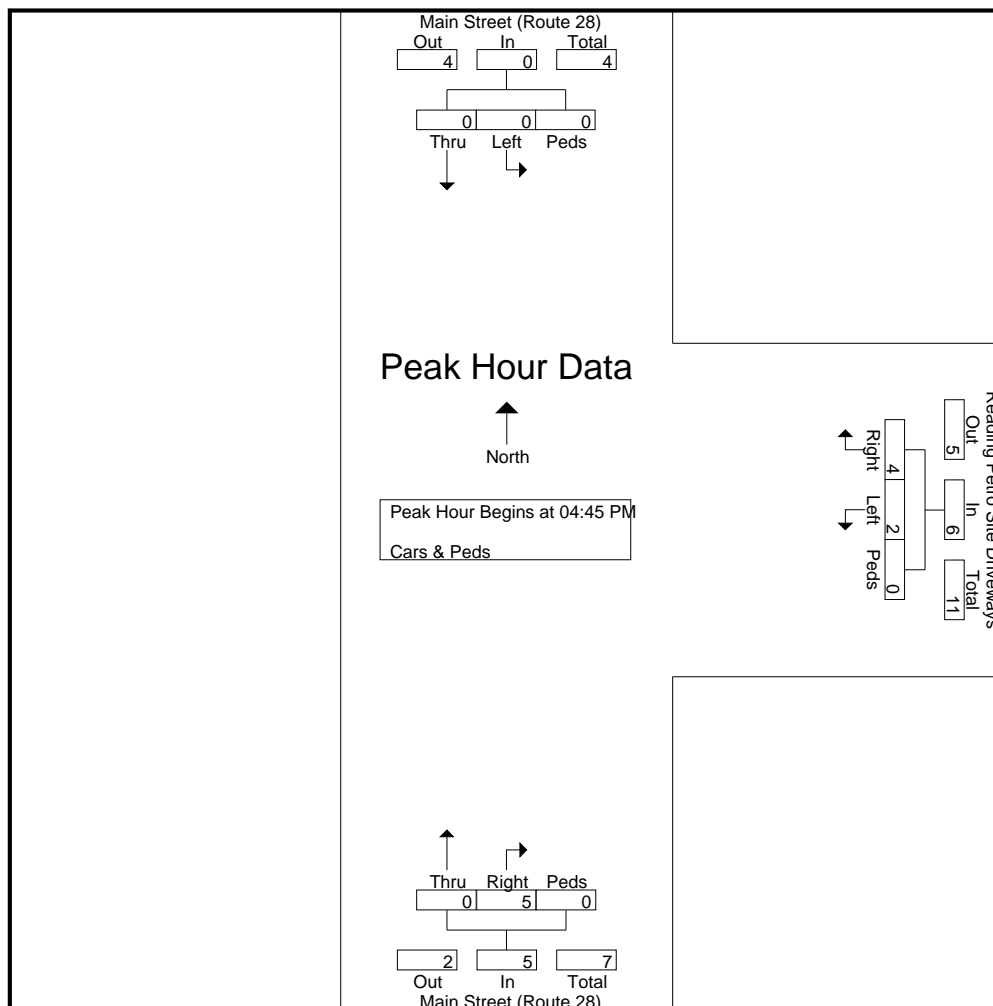
# Transportation Data Corporation

Mario Perone, mperone1@verizon.net  
tel (781) 587-0086 cell (781) 439-4999

N/S: Main Street (Route 28)  
E: Reading Petroleum Site Drives  
City, State: Reading, MA  
Client: McM/Shana Gare

File Name : 05660BB  
Site Code : Y22C2011  
Start Date : 1/4/2023  
Page No : 1

| Start Time   | Main Street (Route 28)<br>From North |      |      |            | Reading Petro Site Driveways<br>From East |      |      |            | Main Street (Route 28)<br>From South |      |      |            | Int. Total |
|--|--------------------------------------|------|------|------------|---|------|------|------------|--------------------------------------|------|------|------------|------------|
|  | Thru                                 | Left | Peds | App. Total | Right                                     | Left | Peds | App. Total | Right                                | Thru | Peds | App. Total |            |
| Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1 |                                      |      |      |            |   |      |      |            |                                      |      |      |            |            |
| Peak Hour for Entire Intersection Begins at 04:45 PM       |                                      |      |      |            |   |      |      |            |                                      |      |      |            |            |
| 04:45 PM   | 0                                    | 0    | 0    | 0          | 2   | 0    | 0    | 2          | 1                                    | 0    | 0    | 1          | 3          |
| 05:00 PM   | 0                                    | 0    | 0    | 0          | 1   | 1    | 0    | 2          | 0                                    | 0    | 0    | 0          | 2          |
| 05:15 PM   | 0                                    | 0    | 0    | 0          | 0   | 1    | 0    | 1          | 2                                    | 0    | 0    | 2          | 3          |
| 05:30 PM   | 0                                    | 0    | 0    | 0          | 1   | 0    | 0    | 1          | 2                                    | 0    | 0    | 2          | 3          |
| Total Volume   | 0                                    | 0    | 0    | 0          | 4   | 2    | 0    | 6          | 5                                    | 0    | 0    | 5          | 11         |
| % App. Total   | 0                                    | 0    | 0    | 0          | 66.7                                      | 33.3 | 0    |            | 100                                  | 0    | 0    |            |            |
| PHF  | .000                                 | .000 | .000 | .000       | .500                                      | .500 | .000 | .750       | .625                                 | .000 | .000 | .625       | .917       |



# Transportation Data Corporation

Mario Perone, mperone1@verizon.net  
tel (781) 587-0086 cell (781) 439-4999

N/S: Main Street (Route 28)  
E: Reading Petroleum Site Drives  
City, State: Reading, MA  
Client: McM/Shana Gare

File Name : 05660BB  
Site Code : Y22C2011  
Start Date : 1/4/2023  
Page No : 1

### Groups Printed- Cars & Peds

| Start Time         | Main Street (Route 28)<br>From North |          |          | Reading Petro Site Driveways<br>From East |          |          | Main Street (Route 28)<br>From South |          |          | Int. Total |
|--------------------|--------------------------------------|----------|----------|---|----------|----------|--------------------------------------|----------|----------|------------|
|                    | Thru                                 | Left     | Peds     | Right                                     | Left     | Peds     | Right                                | Thru     | Peds     |            |
| 04:00 PM           | 0                                    | 0        | 0        | 0   | 1        | 0        | 2                                    | 0        | 0        | 3          |
| 04:15 PM           | 0                                    | 0        | 0        | 0   | 1        | 0        | 1                                    | 0        | 0        | 2          |
| 04:30 PM           | 0                                    | 0        | 0        | 0   | 0        | 0        | 0                                    | 0        | 0        | 0          |
| 04:45 PM           | 0                                    | 0        | 0        | 2   | 0        | 0        | 1                                    | 0        | 0        | 3          |
| <b>Total</b>       | <b>0</b>                             | <b>0</b> | <b>0</b> | <b>2</b>                                  | <b>2</b> | <b>0</b> | <b>4</b>                             | <b>0</b> | <b>0</b> | <b>8</b>   |
| 05:00 PM           | 0                                    | 0        | 0        | 1   | 1        | 0        | 0                                    | 0        | 0        | 2          |
| 05:15 PM           | 0                                    | 0        | 0        | 0   | 1        | 0        | 2                                    | 0        | 0        | 3          |
| 05:30 PM           | 0                                    | 0        | 0        | 1   | 0        | 0        | 2                                    | 0        | 0        | 3          |
| 05:45 PM           | 0                                    | 0        | 0        | 0   | 0        | 0        | 0                                    | 0        | 0        | 0          |
| <b>Total</b>       | <b>0</b>                             | <b>0</b> | <b>0</b> | <b>2</b>                                  | <b>2</b> | <b>0</b> | <b>4</b>                             | <b>0</b> | <b>0</b> | <b>8</b>   |
| <b>Grand Total</b> | <b>0</b>                             | <b>0</b> | <b>0</b> | <b>4</b>                                  | <b>4</b> | <b>0</b> | <b>8</b>                             | <b>0</b> | <b>0</b> | <b>16</b>  |
| Apprch %           | 0                                    | 0        | 0        | 50  | 50       | 0        | 100                                  | 0        | 0        |            |
| Total %            | 0                                    | 0        | 0        | 25  | 25       | 0        | 50                                   | 0        | 0        |            |

| Start Time   | Main Street (Route 28)<br>From North |          |          |            | Reading Petro Site Driveways<br>From East |             |          |             | Main Street (Route 28)<br>From South |          |          |             | Int. Total  |
|--|--------------------------------------|----------|----------|------------|---|-------------|----------|-------------|--------------------------------------|----------|----------|-------------|-------------|
|  | Thru                                 | Left     | Peds     | App. Total | Right                                     | Left        | Peds     | App. Total  | Right                                | Thru     | Peds     | App. Total  |             |
| Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1 |                                      |          |          |            |   |             |          |             |                                      |          |          |             |             |
| Peak Hour for Entire Intersection Begins at 04:45 PM       |                                      |          |          |            |   |             |          |             |                                      |          |          |             |             |
| 04:45 PM   | 0                                    | 0        | 0        | 0          | 2   | 0           | 0        | 2           | 1                                    | 0        | 0        | 1           | 3           |
| 05:00 PM   | 0                                    | 0        | 0        | 0          | 1   | 1           | 0        | 2           | 0                                    | 0        | 0        | 0           | 2           |
| 05:15 PM   | 0                                    | 0        | 0        | 0          | 0   | 1           | 0        | 1           | 2                                    | 0        | 0        | 2           | 3           |
| 05:30 PM   | 0                                    | 0        | 0        | 0          | 1   | 0           | 0        | 1           | 2                                    | 0        | 0        | 2           | 3           |
| <b>Total Volume</b>  | <b>0</b>                             | <b>0</b> | <b>0</b> | <b>0</b>   | <b>4</b>                                  | <b>2</b>    | <b>0</b> | <b>6</b>    | <b>5</b>                             | <b>0</b> | <b>0</b> | <b>5</b>    | <b>11</b>   |
| <b>% App. Total</b>  | <b>0</b>                             | <b>0</b> | <b>0</b> | <b>0</b>   | <b>66.7</b>                               | <b>33.3</b> | <b>0</b> | <b>.750</b> | <b>100</b>                           | <b>0</b> | <b>0</b> | <b>.625</b> | <b>.917</b> |
| PHF  | .000                                 | .000     | .000     | .000       | .500                                      | .500        | .000     | .750        | .625                                 | .000     | .000     | .625        | .917        |

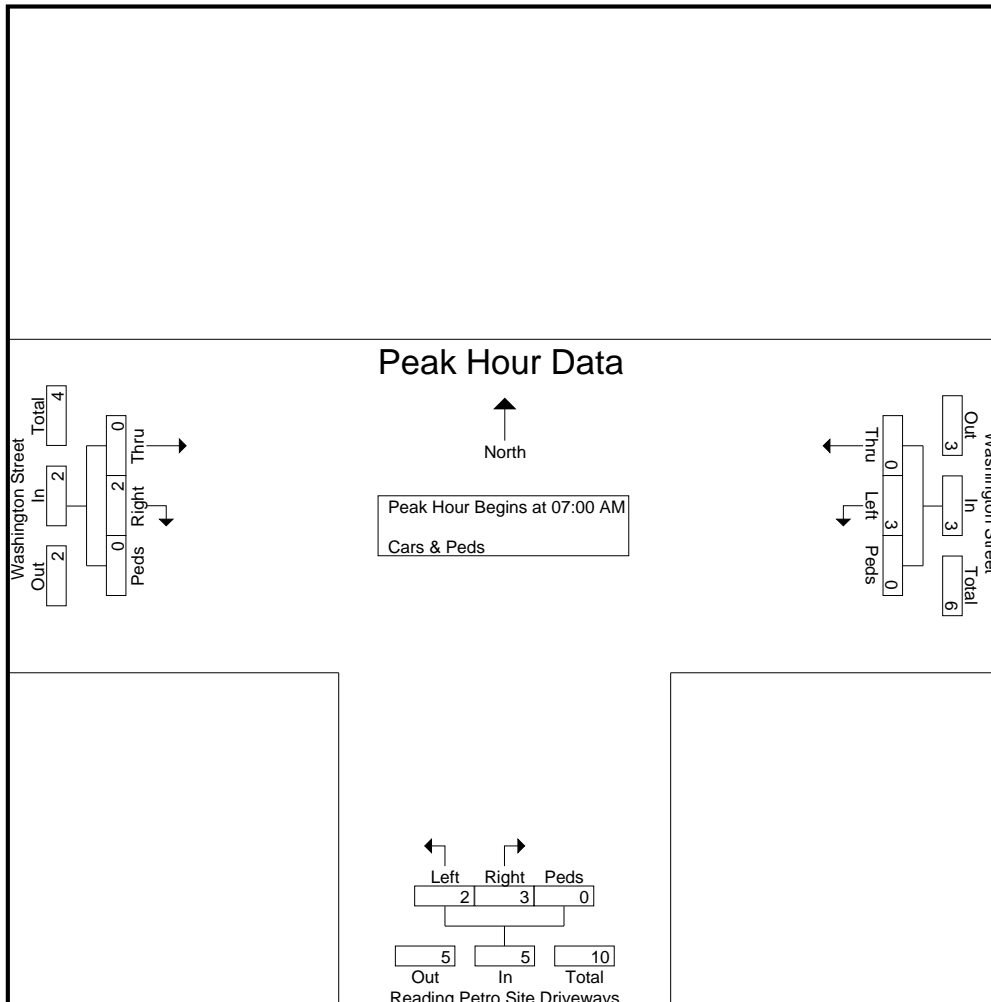
# Transportation Data Corporation

Mario Perone, mperone1@verizon.net  
tel (781) 587-0086 cell (781) 439-4999

S: Reading Petroleum Site Drives  
E/W: Washington Street  
City, State: Reading, MA  
Client: McM/Shana Gare

File Name : 05660C  
Site Code : Y22C2011  
Start Date : 1/4/2023  
Page No : 1

| Start Time   | Washington Street<br>From East |      |      |            | Reading Petro Site Driveways<br>From South |      |      |            | Washington Street<br>From West |      |      |            | Int. Total |
|--|--------------------------------|------|------|------------|--|------|------|------------|--------------------------------|------|------|------------|------------|
|  | Thru                           | Left | Peds | App. Total | Right                                      | Left | Peds | App. Total | Right                          | Thru | Peds | App. Total |            |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 |                                |      |      |            |  |      |      |            |                                |      |      |            |            |
| Peak Hour for Entire Intersection Begins at 07:00 AM       |                                |      |      |            |  |      |      |            |                                |      |      |            |            |
| 07:00 AM   | 0                              | 0    | 0    | 0          | 1  | 0    | 0    | 1          | 0                              | 0    | 0    | 0          | 1          |
| 07:15 AM   | 0                              | 0    | 0    | 0          | 1  | 0    | 0    | 1          | 1                              | 0    | 0    | 1          | 2          |
| 07:30 AM   | 0                              | 1    | 0    | 1          | 1  | 0    | 0    | 1          | 0                              | 0    | 0    | 0          | 2          |
| 07:45 AM   | 0                              | 2    | 0    | 2          | 0  | 2    | 0    | 2          | 1                              | 0    | 0    | 1          | 5          |
| Total Volume   | 0                              | 3    | 0    | 3          | 3  | 2    | 0    | 5          | 2                              | 0    | 0    | 2          | 10         |
| % App. Total   | 0                              | 100  | 0    |            | 60   | 40   | 0    |            | 100                            | 0    | 0    |            |            |
| PHF  | .000                           | .375 | .000 | .375       | .750                                       | .250 | .000 | .625       | .500                           | .000 | .000 | .500       | .500       |





# Transportation Data Corporation

Mario Perone, mperone1@verizon.net  
tel (781) 587-0086 cell (781) 439-4999

S: Reading Petroleum Site Drives  
E/W: Washington Street  
City, State: Reading, MA  
Client: McM/Shana Gare

File Name : 05660C  
Site Code : Y22C2011  
Start Date : 1/4/2023  
Page No : 1

### Groups Printed- Cars & Peds

| Start Time         | Washington Street<br>From East |          |          | Reading Petro Site Driveways<br>From South |          |          | Washington Street<br>From West |          |          | Int. Total |
|--------------------|--------------------------------|----------|----------|--|----------|----------|--------------------------------|----------|----------|------------|
|                    | Thru                           | Left     | Peds     | Right                                      | Left     | Peds     | Right                          | Thru     | Peds     |            |
| 07:00 AM           | 0                              | 0        | 0        | 1  | 0        | 0        | 0                              | 0        | 0        | 1          |
| 07:15 AM           | 0                              | 0        | 0        | 1  | 0        | 0        | 1                              | 0        | 0        | 2          |
| 07:30 AM           | 0                              | 1        | 0        | 1  | 0        | 0        | 0                              | 0        | 0        | 2          |
| 07:45 AM           | 0                              | 2        | 0        | 0  | 2        | 0        | 1                              | 0        | 0        | 5          |
| <b>Total</b>       | <b>0</b>                       | <b>3</b> | <b>0</b> | <b>3</b>                                   | <b>2</b> | <b>0</b> | <b>2</b>                       | <b>0</b> | <b>0</b> | <b>10</b>  |
| 08:00 AM           | 0                              | 0        | 0        | 1  | 0        | 0        | 0                              | 0        | 0        | 1          |
| 08:15 AM           | 0                              | 0        | 0        | 1  | 0        | 0        | 1                              | 0        | 0        | 2          |
| 08:30 AM           | 0                              | 2        | 0        | 0  | 0        | 0        | 0                              | 0        | 0        | 2          |
| 08:45 AM           | 0                              | 0        | 0        | 2  | 1        | 0        | 1                              | 0        | 0        | 4          |
| <b>Total</b>       | <b>0</b>                       | <b>2</b> | <b>0</b> | <b>4</b>                                   | <b>1</b> | <b>0</b> | <b>2</b>                       | <b>0</b> | <b>0</b> | <b>9</b>   |
| <b>Grand Total</b> | <b>0</b>                       | <b>5</b> | <b>0</b> | <b>7</b>                                   | <b>3</b> | <b>0</b> | <b>4</b>                       | <b>0</b> | <b>0</b> | <b>19</b>  |
| Apprch %           | 0                              | 100      | 0        | 70   | 30       | 0        | 100                            | 0        | 0        |            |
| Total %            | 0                              | 26.3     | 0        | 36.8                                       | 15.8     | 0        | 21.1                           | 0        | 0        |            |

| Start Time   | Washington Street<br>From East |            |          |            | Reading Petro Site Driveways<br>From South |           |          |            | Washington Street<br>From West |          |          |            | Int. Total |
|--|--------------------------------|------------|----------|------------|--|-----------|----------|------------|--------------------------------|----------|----------|------------|------------|
|  | Thru                           | Left       | Peds     | App. Total | Right                                      | Left      | Peds     | App. Total | Right                          | Thru     | Peds     | App. Total |            |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 |                                |            |          |            |  |           |          |            |                                |          |          |            |            |
| Peak Hour for Entire Intersection Begins at 07:00 AM       |                                |            |          |            |  |           |          |            |                                |          |          |            |            |
| 07:00 AM   | 0                              | 0          | 0        | 0          | 1  | 0         | 0        | 1          | 0                              | 0        | 0        | 0          | 1          |
| 07:15 AM   | 0                              | 0          | 0        | 0          | 1  | 0         | 0        | 1          | 1                              | 0        | 0        | 1          | 2          |
| 07:30 AM   | 0                              | 1          | 0        | 1          | 1  | 0         | 0        | 1          | 0                              | 0        | 0        | 0          | 2          |
| 07:45 AM   | 0                              | 2          | 0        | 2          | 0  | 2         | 0        | 2          | 1                              | 0        | 0        | 1          | 5          |
| <b>Total Volume</b>  | <b>0</b>                       | <b>3</b>   | <b>0</b> | <b>3</b>   | <b>3</b>                                   | <b>2</b>  | <b>0</b> | <b>5</b>   | <b>2</b>                       | <b>0</b> | <b>0</b> | <b>2</b>   | <b>10</b>  |
| <b>% App. Total</b>  | <b>0</b>                       | <b>100</b> | <b>0</b> | <b>375</b> | <b>60</b>                                  | <b>40</b> | <b>0</b> | <b>625</b> | <b>100</b>                     | <b>0</b> | <b>0</b> | <b>500</b> | <b>500</b> |
| PHF  | .000                           | .375       | .000     | .375       | .750                                       | .250      | .000     | .625       | .500                           | .000     | .000     | .500       | .500       |

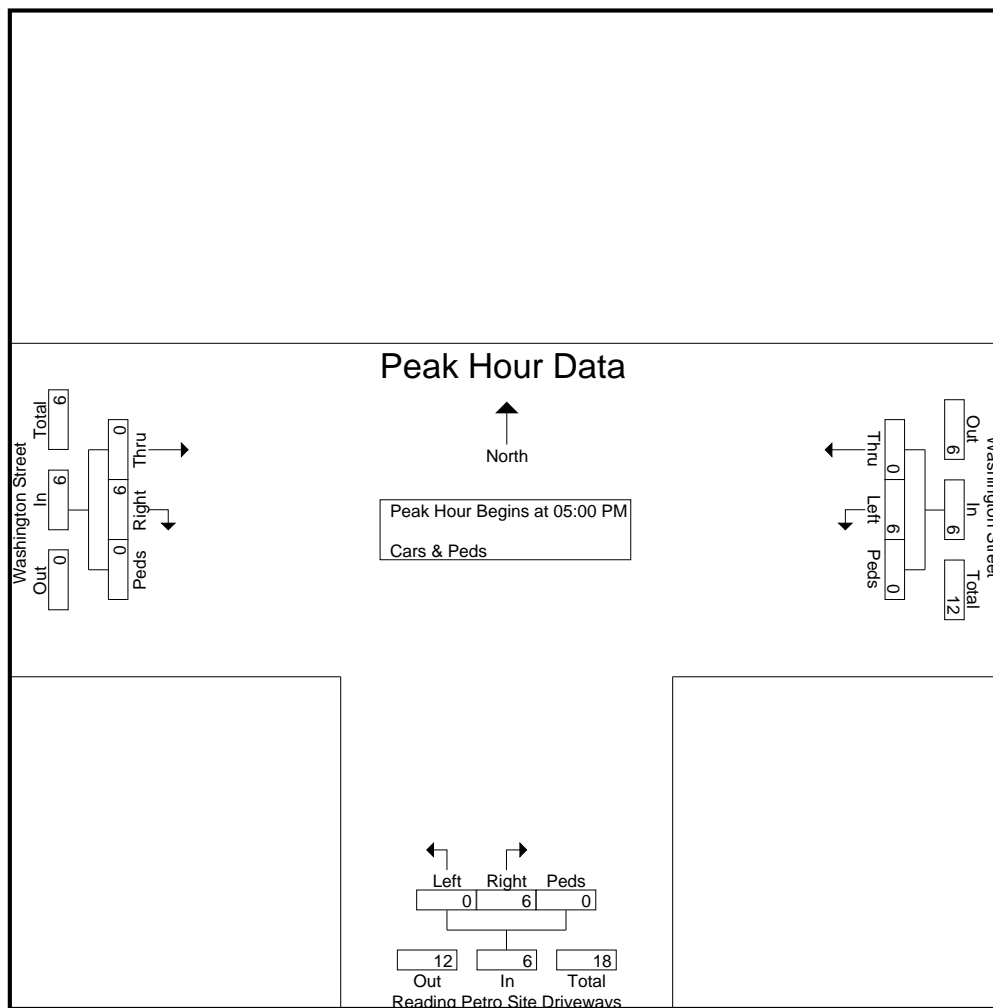
# Transportation Data Corporation

Mario Perone, mperone1@verizon.net  
tel (781) 587-0086 cell (781) 439-4999

S: Reading Petroleum Site Drives  
E/W: Washington Street  
City, State: Reading, MA  
Client: McM/Shana Gare

File Name : 05660CC  
Site Code : Y22C2011  
Start Date : 1/4/2023  
Page No : 1

| Start Time   | Washington Street From East |      |      |            | Reading Petro Site Driveways From South |      |      |            | Washington Street From West |      |      |            | Int. Total |
|--|-----------------------------|------|------|------------|---|------|------|------------|-----------------------------|------|------|------------|------------|
|  | Thru                        | Left | Peds | App. Total | Right                                   | Left | Peds | App. Total | Right                       | Thru | Peds | App. Total |            |
| Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1 |                             |      |      |            |   |      |      |            |                             |      |      |            |            |
| Peak Hour for Entire Intersection Begins at 05:00 PM       |                             |      |      |            |   |      |      |            |                             |      |      |            |            |
| 05:00 PM   | 0                           | 2    | 0    | 2          | 2                                       | 0    | 0    | 2          | 2                           | 0    | 0    | 2          | 6          |
| 05:15 PM   | 0                           | 3    | 0    | 3          | 1                                       | 0    | 0    | 1          | 1                           | 0    | 0    | 1          | 5          |
| 05:30 PM   | 0                           | 1    | 0    | 1          | 2                                       | 0    | 0    | 2          | 1                           | 0    | 0    | 1          | 4          |
| 05:45 PM   | 0                           | 0    | 0    | 0          | 1                                       | 0    | 0    | 1          | 2                           | 0    | 0    | 2          | 3          |
| Total Volume   | 0                           | 6    | 0    | 6          | 6                                       | 0    | 0    | 6          | 6                           | 0    | 0    | 6          | 18         |
| % App. Total   | 0                           | 100  | 0    |            | 100                                     | 0    | 0    |            | 100                         | 0    | 0    |            |            |
| PHF  | .000                        | .500 | .000 | .500       | .750                                    | .000 | .000 | .750       | .750                        | .000 | .000 | .750       | .750       |



# Transportation Data Corporation

Mario Perone, mperone1@verizon.net

tel (781) 587-0086 cell (781) 439-4999

S: Reading Petroleum Site Drives  
 E/W: Washington Street  
 City, State: Reading, MA  
 Client: McM/Shana Gare

File Name : 05660CC  
 Site Code : Y22C2011  
 Start Date : 1/4/2023  
 Page No : 1

### Groups Printed- Cars & Peds

| Start Time         | Washington Street<br>From East |          |          | Reading Petro Site Driveways<br>From South |          |          | Washington Street<br>From West |          |          | Int. Total |
|--------------------|--------------------------------|----------|----------|--|----------|----------|--------------------------------|----------|----------|------------|
|                    | Thru                           | Left     | Peds     | Right                                      | Left     | Peds     | Right                          | Thru     | Peds     |            |
| 04:00 PM           | 0                              | 1        | 0        | 2  | 0        | 0        | 0                              | 0        | 0        | 3          |
| 04:15 PM           | 0                              | 0        | 0        | 3  | 0        | 0        | 3                              | 0        | 0        | 6          |
| 04:30 PM           | 0                              | 0        | 0        | 1  | 0        | 0        | 0                              | 0        | 0        | 1          |
| 04:45 PM           | 0                              | 0        | 0        | 1  | 0        | 0        | 0                              | 0        | 0        | 1          |
| <b>Total</b>       | <b>0</b>                       | <b>1</b> | <b>0</b> | <b>7</b>                                   | <b>0</b> | <b>0</b> | <b>3</b>                       | <b>0</b> | <b>0</b> | <b>11</b>  |
| 05:00 PM           | 0                              | 2        | 0        | 2  | 0        | 0        | 2                              | 0        | 0        | 6          |
| 05:15 PM           | 0                              | 3        | 0        | 1  | 0        | 0        | 1                              | 0        | 0        | 5          |
| 05:30 PM           | 0                              | 1        | 0        | 2  | 0        | 0        | 1                              | 0        | 0        | 4          |
| 05:45 PM           | 0                              | 0        | 0        | 1  | 0        | 0        | 2                              | 0        | 0        | 3          |
| <b>Total</b>       | <b>0</b>                       | <b>6</b> | <b>0</b> | <b>6</b>                                   | <b>0</b> | <b>0</b> | <b>6</b>                       | <b>0</b> | <b>0</b> | <b>18</b>  |
| <b>Grand Total</b> | <b>0</b>                       | <b>7</b> | <b>0</b> | <b>13</b>                                  | <b>0</b> | <b>0</b> | <b>9</b>                       | <b>0</b> | <b>0</b> | <b>29</b>  |
| Apprch %           | 0                              | 100      | 0        | 100  | 0        | 0        | 100                            | 0        | 0        |            |
| Total %            | 0                              | 24.1     | 0        | 44.8                                       | 0        | 0        | 31                             | 0        | 0        |            |

| Start Time   | Washington Street<br>From East |            |          |            | Reading Petro Site Driveways<br>From South |          |          |            | Washington Street<br>From West |          |          |            | Int. Total |
|--|--------------------------------|------------|----------|------------|--|----------|----------|------------|--------------------------------|----------|----------|------------|------------|
|  | Thru                           | Left       | Peds     | App. Total | Right                                      | Left     | Peds     | App. Total | Right                          | Thru     | Peds     | App. Total |            |
| Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1 |                                |            |          |            |  |          |          |            |                                |          |          |            |            |
| Peak Hour for Entire Intersection Begins at 05:00 PM       |                                |            |          |            |  |          |          |            |                                |          |          |            |            |
| 05:00 PM   | 0                              | 2          | 0        | 2          | 2  | 0        | 0        | 2          | 2                              | 0        | 0        | 2          | 6          |
| 05:15 PM   | 0                              | 3          | 0        | 3          | 1  | 0        | 0        | 1          | 1                              | 0        | 0        | 1          | 5          |
| 05:30 PM   | 0                              | 1          | 0        | 1          | 2  | 0        | 0        | 2          | 1                              | 0        | 0        | 1          | 4          |
| 05:45 PM   | 0                              | 0          | 0        | 0          | 1  | 0        | 0        | 1          | 2                              | 0        | 0        | 2          | 3          |
| <b>Total Volume</b>  | <b>0</b>                       | <b>6</b>   | <b>0</b> | <b>6</b>   | <b>6</b>                                   | <b>0</b> | <b>0</b> | <b>6</b>   | <b>6</b>                       | <b>0</b> | <b>0</b> | <b>6</b>   | <b>18</b>  |
| <b>% App. Total</b>  | <b>0</b>                       | <b>100</b> | <b>0</b> | <b>100</b> | <b>100</b>                                 | <b>0</b> | <b>0</b> | <b>100</b> | <b>100</b>                     | <b>0</b> | <b>0</b> | <b>100</b> |            |
| PHF  | .000                           | .500       | .000     | .500       | .750                                       | .000     | .000     | .750       | .750                           | .000     | .000     | .750       | .750       |



**Transportation Data Corporation**

Mario Perone, mperone1@verizon.net  
tel (781) 587-0086 cell (781) 439-4999

Main Street (Route 28)  
south of Burger King Driveway  
City, State: Reading, MA  
Client: McM/Shana Gare

05660Aclass  
Site Code: Y-22C20.11

**Northbound**

| Start Time  | Bikes | Cars & Trailers | 2 Axle Long | Buses | 2 Axle 6 Tire | 3 Axle Single | 4 Axle Single | <5 Axl Double | 5 Axle Double | >6 Axl Double | <6 Axl Multi | 6 Axle Multi | >6 Axl Multi | Total |
|-------------|-------|-----------------|-------------|-------|---------------|---------------|---------------|---------------|---------------|---------------|--------------|--------------|--------------|-------|
| 01/04/23    | 0     | 7               | 4           | 0     | 1             | 0             | 0             | 0             | 1             | 0             | 0            | 0            | 0            | 13    |
| 01:00       | 0     | 3               | 1           | 0     | 0             | 0             | 0             | 0             | 0             | 0             | 0            | 0            | 0            | 4     |
| 02:00       | 0     | 2               | 6           | 0     | 0             | 0             | 0             | 0             | 0             | 0             | 0            | 0            | 0            | 8     |
| 03:00       | 0     | 3               | 1           | 0     | 2             | 1             | 0             | 0             | 0             | 0             | 0            | 0            | 0            | 7     |
| 04:00       | 0     | 7               | 1           | 0     | 1             | 0             | 0             | 0             | 0             | 0             | 0            | 0            | 0            | 9     |
| 05:00       | 0     | 26              | 8           | 0     | 9             | 0             | 0             | 0             | 0             | 0             | 0            | 0            | 0            | 43    |
| 06:00       | 1     | 83              | 20          | 3     | 9             | 1             | 0             | 0             | 0             | 0             | 0            | 0            | 0            | 117   |
| 07:00       | 3     | 227             | 47          | 7     | 18            | 2             | 0             | 0             | 1             | 0             | 0            | 0            | 0            | 305   |
| 08:00       | 2     | 291             | 77          | 1     | 27            | 2             | 0             | 0             | 0             | 0             | 0            | 0            | 0            | 400   |
| 09:00       | 7     | 260             | 57          | 4     | 20            | 0             | 0             | 1             | 0             | 0             | 0            | 0            | 0            | 349   |
| 10:00       | 4     | 300             | 57          | 0     | 24            | 0             | 0             | 0             | 0             | 0             | 0            | 0            | 0            | 385   |
| 11:00       | 7     | 321             | 65          | 1     | 17            | 2             | 0             | 0             | 0             | 0             | 0            | 0            | 0            | 413   |
| 12 PM       | 7     | 375             | 55          | 1     | 26            | 0             | 0             | 1             | 0             | 0             | 0            | 0            | 0            | 465   |
| 13:00       | 8     | 367             | 68          | 1     | 23            | 1             | 1             | 1             | 0             | 0             | 0            | 0            | 0            | 470   |
| 14:00       | 9     | 335             | 79          | 3     | 32            | 2             | 0             | 0             | 1             | 0             | 0            | 0            | 0            | 461   |
| 15:00       | 10    | 390             | 73          | 3     | 21            | 2             | 0             | 1             | 0             | 0             | 0            | 0            | 0            | 500   |
| 16:00       | 6     | 370             | 88          | 0     | 25            | 2             | 0             | 0             | 0             | 0             | 0            | 0            | 0            | 491   |
| 17:00       | 8     | 388             | 83          | 0     | 41            | 2             | 0             | 0             | 0             | 0             | 0            | 0            | 0            | 522   |
| 18:00       | 3     | 289             | 36          | 1     | 17            | 0             | 0             | 1             | 1             | 0             | 0            | 0            | 0            | 348   |
| 19:00       | 3     | 191             | 35          | 0     | 8             | 0             | 0             | 0             | 1             | 0             | 0            | 0            | 0            | 238   |
| 20:00       | 1     | 94              | 18          | 0     | 8             | 0             | 0             | 0             | 0             | 0             | 0            | 0            | 0            | 121   |
| 21:00       | 0     | 67              | 15          | 0     | 0             | 0             | 0             | 0             | 0             | 0             | 0            | 0            | 0            | 82    |
| 22:00       | 0     | 25              | 16          | 0     | 2             | 0             | 0             | 0             | 0             | 0             | 0            | 0            | 0            | 43    |
| 23:00       | 0     | 17              | 5           | 0     | 0             | 0             | 0             | 0             | 0             | 0             | 0            | 0            | 0            | 22    |
| Day Total   | 79    | 4438            | 915         | 25    | 331           | 17            | 1             | 5             | 5             | 0             | 0            | 0            | 0            | 5816  |
| Percent     | 1.4%  | 76.3%           | 15.7%       | 0.4%  | 5.7%          | 0.3%          | 0.0%          | 0.1%          | 0.1%          | 0.0%          | 0.0%         | 0.0%         | 0.0%         |       |
| AM Peak     | 09:00 | 11:00           | 08:00       | 07:00 | 08:00         | 07:00         |               | 09:00         | 00:00         |               |              |              |              | 11:00 |
| Vol.        | 7     | 321             | 77          | 7     | 27            | 2             |               | 1             | 1             |               |              |              |              | 413   |
| PM Peak     | 15:00 | 15:00           | 16:00       | 14:00 | 17:00         | 14:00         | 13:00         | 12:00         | 14:00         |               |              |              |              | 17:00 |
| Vol.        | 10    | 390             | 88          | 3     | 41            | 2             | 1             | 1             | 1             |               |              |              |              | 522   |
| Grand Total | 79    | 4438            | 915         | 25    | 331           | 17            | 1             | 5             | 5             | 0             | 0            | 0            | 0            | 5816  |
| Percent     | 1.4%  | 76.3%           | 15.7%       | 0.4%  | 5.7%          | 0.3%          | 0.0%          | 0.1%          | 0.1%          | 0.0%          | 0.0%         | 0.0%         | 0.0%         |       |

**Transportation Data Corporation**

Mario Perone, mperone1@verizon.net  
tel (781) 587-0086 cell (781) 439-4999

Main Street (Route 28)  
south of Burger King Driveway  
City, State: Reading, MA  
Client: McM/Shana Gare

05660Aclass  
Site Code: Y-22C20.11

**Southbound**

| Start Time  | Bikes    | Cars & Trailers | 2 Axle Long | Buses    | 2 Axle 6 Tire | 3 Axle Single | 4 Axle Single | <5 Axl Double | 5 Axle Double | >6 Axl Double | <6 Axl Multi | 6 Axle Multi | >6 Axl Multi | Total      |
|-------------|----------|-----------------|-------------|----------|---------------|---------------|---------------|---------------|---------------|---------------|--------------|--------------|--------------|------------|
| 01/04/23    | 0        | 17              | 2           | 0        | 0             | 0             | 0             | 0             | 0             | 0             | 0            | 0            | 0            | 19         |
| 01:00       | 0        | 4               | 1           | 0        | 0             | 0             | 0             | 1             | 0             | 0             | 0            | 0            | 0            | 6          |
| 02:00       | 0        | 2               | 1           | 0        | 0             | 0             | 0             | 0             | 1             | 0             | 0            | 0            | 0            | 4          |
| 03:00       | 0        | 4               | 2           | 0        | 1             | 0             | 0             | 0             | 0             | 0             | 0            | 0            | 0            | 7          |
| 04:00       | 0        | 13              | 2           | 0        | 1             | 0             | 0             | 0             | 0             | 0             | 0            | 0            | 0            | 16         |
| 05:00       | 0        | 43              | 11          | 0        | 14            | 1             | 0             | 0             | 0             | 0             | 0            | 0            | 0            | 69         |
| 06:00       | 0        | 205             | 43          | 0        | 8             | 1             | 0             | 1             | 0             | 0             | 0            | 0            | 0            | 258        |
| 07:00       | 3        | 297             | <b>74</b>   | 1        | <b>24</b>     | 2             | 0             | <b>2</b>      | 0             | 0             | 0            | 0            | 0            | 403        |
| 08:00       | 4        | 304             | 64          | 2        | 13            | 0             | 0             | 0             | <b>3</b>      | 0             | 0            | 0            | 0            | 390        |
| 09:00       | <b>5</b> | 250             | 53          | <b>3</b> | 19            | <b>4</b>      | 0             | 0             | 0             | 0             | 0            | 0            | 0            | 334        |
| 10:00       | 5        | 269             | 54          | 0        | 13            | 0             | 0             | 0             | 0             | 0             | 0            | 0            | 0            | 341        |
| 11:00       | 3        | <b>341</b>      | 53          | 3        | 20            | 2             | 0             | 0             | 1             | 0             | 0            | 0            | 0            | <b>423</b> |
| 12 PM       | 5        | 313             | 50          | 1        | 15            | <b>2</b>      | 0             | <b>4</b>      | 0             | 0             | 0            | 0            | 0            | 390        |
| 13:00       | 3        | <b>324</b>      | <b>64</b>   | 1        | 12            | 1             | 0             | 3             | <b>1</b>      | 0             | 0            | 0            | 0            | <b>409</b> |
| 14:00       | <b>7</b> | 285             | 52          | 2        | <b>26</b>     | 1             | 0             | 2             | 1             | 0             | 0            | 0            | 0            | 376        |
| 15:00       | 7        | 315             | 63          | <b>5</b> | 15            | 1             | 0             | 1             | 0             | 0             | 0            | 0            | 0            | 407        |
| 16:00       | 4        | 291             | 53          | 0        | 10            | 0             | 0             | 0             | 0             | 0             | 0            | 0            | 0            | 358        |
| 17:00       | 5        | 311             | 47          | 2        | 8             | 0             | 0             | 1             | 0             | 0             | 0            | 0            | 0            | 374        |
| 18:00       | 2        | 236             | 39          | 0        | 9             | 0             | 0             | 0             | 0             | 0             | 0            | 0            | 0            | 286        |
| 19:00       | 3        | 180             | 25          | 0        | 6             | 0             | 0             | 0             | 1             | 0             | 0            | 0            | 0            | 215        |
| 20:00       | 0        | 121             | 29          | 0        | 3             | 0             | 0             | 0             | 1             | 0             | 0            | 0            | 0            | 154        |
| 21:00       | 1        | 94              | 16          | 0        | 2             | 0             | 0             | 0             | 0             | 0             | 0            | 0            | 0            | 113        |
| 22:00       | 0        | 29              | 12          | 0        | 0             | 0             | 0             | 0             | 0             | 0             | 0            | 0            | 0            | 41         |
| 23:00       | 0        | 16              | 2           | 0        | 1             | 0             | 0             | 0             | 0             | 0             | 0            | 0            | 0            | 19         |
| Day Total   | 57       | 4264            | 812         | 20       | 220           | 15            | 0             | 15            | 9             | 0             | 0            | 0            | 0            | 5412       |
| Percent     | 1.1%     | 78.8%           | 15.0%       | 0.4%     | 4.1%          | 0.3%          | 0.0%          | 0.3%          | 0.2%          | 0.0%          | 0.0%         | 0.0%         | 0.0%         |            |
| AM Peak     | 09:00    | 11:00           | 07:00       | 09:00    | 07:00         | 09:00         |               | 07:00         | 08:00         |               |              |              |              | 11:00      |
| Vol.        | 5        | 341             | 74          | 3        | 24            | 4             |               | 2             | 3             |               |              |              |              | 423        |
| PM Peak     | 14:00    | 13:00           | 13:00       | 15:00    | 14:00         | 12:00         |               | 12:00         | 13:00         |               |              |              |              | 13:00      |
| Vol.        | 7        | 324             | 64          | 5        | 26            | 2             |               | 4             | 1             |               |              |              |              | 409        |
| Grand Total | 57       | 4264            | 812         | 20       | 220           | 15            | 0             | 15            | 9             | 0             | 0            | 0            | 0            | 5412       |
| Percent     | 1.1%     | 78.8%           | 15.0%       | 0.4%     | 4.1%          | 0.3%          | 0.0%          | 0.3%          | 0.2%          | 0.0%          | 0.0%         | 0.0%         | 0.0%         |            |

# Transportation Data Corporation

Mario Perone, mperone1@verizon.net  
tel (781) 587-0086 cell (781) 439-4999

Main Street (Route 28)  
south of Burger King Driveway  
City, State: Reading, MA  
Client: McM/Shana Gare

05660Aspeed  
Site Code: Y-22C20.11

Northbound

| Start Time         | 1            | 16           | 21           | 26           | 31           | 36           | 41           | 46           | 51           | 56           | 61           | 66           | 71          | Total        | 85th Percent | 95th Percent |
|--------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|-------------|--------------|--------------|--------------|
| 01/04/23           | 0            | 0            | 0            | 1            | 4            | 3            | 3            | 1            | 1            | 0            | 0            | 0            | 0           | 13           | 45           | 51           |
| 01:00              | 0            | 0            | 0            | 0            | 1            | 1            | 2            | 0            | 0            | 0            | 0            | 0            | 0           | 4            | 43           | 44           |
| 02:00              | 0            | 0            | 1            | 0            | 1            | 3            | 1            | 1            | 1            | 0            | 0            | 0            | 0           | 8            | 49           | 53           |
| 03:00              | 0            | 0            | 1            | 0            | 1            | 1            | 0            | 3            | 1            | 0            | 0            | 0            | 0           | 7            | 49           | 53           |
| 04:00              | 0            | 0            | 0            | 0            | 1            | 3            | 2            | 3            | 0            | 0            | 0            | 0            | 0           | 9            | 47           | 49           |
| 05:00              | 0            | 0            | 1            | 5            | 5            | 15           | 11           | 4            | 2            | 0            | 0            | 0            | 0           | 43           | 44           | 49           |
| 06:00              | 2            | 1            | 3            | 23           | 44           | 30           | 11           | 1            | 2            | 0            | 0            | 0            | 0           | 117          | 39           | 43           |
| 07:00              | 13           | 4            | 29           | 46           | 96           | 89           | 22           | 6            | 0            | 0            | 0            | 0            | 0           | 305          | 39           | 42           |
| 08:00              | 14           | 7            | 11           | 79           | 123          | 130          | 29           | 5            | 2            | 0            | 0            | 0            | 0           | 400          | 39           | 42           |
| 09:00              | 17           | 9            | 18           | 45           | 125          | 102          | 28           | 2            | 2            | 0            | 1            | 0            | 0           | 349          | 39           | 42           |
| 10:00              | 13           | 12           | 18           | 71           | 128          | 116          | 24           | 2            | 0            | 0            | 1            | 0            | 0           | 385          | 38           | 41           |
| 11:00              | 19           | 13           | 28           | 58           | 152          | 112          | 25           | 6            | 0            | 0            | 0            | 0            | 0           | 413          | 38           | 42           |
| 12 PM              | 31           | 19           | 49           | 119          | 130          | 85           | 26           | 4            | 1            | 1            | 0            | 0            | 0           | 465          | 37           | 41           |
| 13:00              | 26           | 18           | 44           | 100          | 166          | 97           | 18           | 1            | 0            | 0            | 0            | 0            | 0           | 470          | 37           | 39           |
| 14:00              | 18           | 3            | 31           | 101          | 175          | 109          | 21           | 3            | 0            | 0            | 0            | 0            | 0           | 461          | 37           | 40           |
| 15:00              | 65           | 30           | 44           | 90           | 166          | 93           | 10           | 2            | 0            | 0            | 0            | 0            | 0           | 500          | 36           | 39           |
| 16:00              | 28           | 16           | 38           | 99           | 187          | 97           | 24           | 2            | 0            | 0            | 0            | 0            | 0           | 491          | 37           | 40           |
| 17:00              | 13           | 12           | 46           | 118          | 209          | 110          | 13           | 1            | 0            | 0            | 0            | 0            | 0           | 522          | 37           | 39           |
| 18:00              | 24           | 3            | 11           | 54           | 122          | 101          | 30           | 3            | 0            | 0            | 0            | 0            | 0           | 348          | 39           | 42           |
| 19:00              | 6            | 3            | 10           | 28           | 66           | 86           | 32           | 5            | 1            | 0            | 0            | 1            | 0           | 238          | 40           | 44           |
| 20:00              | 0            | 1            | 1            | 12           | 31           | 49           | 25           | 2            | 0            | 0            | 0            | 0            | 0           | 121          | 41           | 44           |
| 21:00              | 0            | 0            | 0            | 4            | 21           | 38           | 15           | 1            | 2            | 1            | 0            | 0            | 0           | 82           | 42           | 44           |
| 22:00              | 0            | 1            | 2            | 1            | 8            | 19           | 11           | 1            | 0            | 0            | 0            | 0            | 0           | 43           | 42           | 44           |
| 23:00              | 1            | 0            | 1            | 1            | 6            | 7            | 6            | 0            | 0            | 0            | 0            | 0            | 0           | 22           | 42           | 44           |
| <b>Total</b>       | <b>290</b>   | <b>152</b>   | <b>387</b>   | <b>1055</b>  | <b>1968</b>  | <b>1496</b>  | <b>389</b>   | <b>59</b>    | <b>15</b>    | <b>2</b>     | <b>2</b>     | <b>1</b>     | <b>0</b>    | <b>5816</b>  |              |              |
| <b>Percent</b>     | <b>5.0%</b>  | <b>2.6%</b>  | <b>6.7%</b>  | <b>18.1%</b> | <b>33.8%</b> | <b>25.7%</b> | <b>6.7%</b>  | <b>1.0%</b>  | <b>0.3%</b>  | <b>0.0%</b>  | <b>0.0%</b>  | <b>0.0%</b>  | <b>0.0%</b> |              |              |              |
| <b>AM Peak</b>     | <b>11:00</b> | <b>11:00</b> | <b>07:00</b> | <b>08:00</b> | <b>11:00</b> | <b>08:00</b> | <b>08:00</b> | <b>07:00</b> | <b>05:00</b> |              | <b>09:00</b> |              |             | <b>11:00</b> |              |              |
| <b>Vol.</b>        | <b>19</b>    | <b>13</b>    | <b>29</b>    | <b>79</b>    | <b>152</b>   | <b>130</b>   | <b>29</b>    | <b>6</b>     | <b>2</b>     |              | <b>1</b>     |              |             | <b>413</b>   |              |              |
| <b>PM Peak</b>     | <b>15:00</b> | <b>15:00</b> | <b>12:00</b> | <b>12:00</b> | <b>17:00</b> | <b>17:00</b> | <b>19:00</b> | <b>19:00</b> | <b>21:00</b> | <b>12:00</b> |              | <b>19:00</b> |             | <b>17:00</b> |              |              |
| <b>Vol.</b>        | <b>65</b>    | <b>30</b>    | <b>49</b>    | <b>119</b>   | <b>209</b>   | <b>110</b>   | <b>32</b>    | <b>5</b>     | <b>2</b>     | <b>1</b>     |              | <b>1</b>     |             | <b>522</b>   |              |              |
| <b>Grand Total</b> | <b>290</b>   | <b>152</b>   | <b>387</b>   | <b>1055</b>  | <b>1968</b>  | <b>1496</b>  | <b>389</b>   | <b>59</b>    | <b>15</b>    | <b>2</b>     | <b>2</b>     | <b>1</b>     | <b>0</b>    | <b>5816</b>  |              |              |
| <b>Percent</b>     | <b>5.0%</b>  | <b>2.6%</b>  | <b>6.7%</b>  | <b>18.1%</b> | <b>33.8%</b> | <b>25.7%</b> | <b>6.7%</b>  | <b>1.0%</b>  | <b>0.3%</b>  | <b>0.0%</b>  | <b>0.0%</b>  | <b>0.0%</b>  | <b>0.0%</b> |              |              |              |

15th Percentile : 25 MPH  
50th Percentile : 32 MPH  
85th Percentile : 38 MPH  
95th Percentile : 42 MPH

Stats 10 MPH Pace Speed : 31-40 MPH

Number of Vehicles > 35 MPH : 1964  
Percent of Vehicles > 35 MPH : 33.8%  
Mean Speed(Average) : 32 MPH



# Transportation Data Corporation

Mario Perone, mperone1@verizon.net  
tel (781) 587-0086 cell (781) 439-4999

Main Street (Route 28)  
south of Burger King Driveway  
City, State: Reading, MA  
Client: McM/Shana Gare

05660Aspeed  
Site Code: Y-22C20.11

Southbound

| Start Time         | 1          | 16        | 21         | 26         | 31          | 36          | 41         | 46        | 51        | 56       | 61       | 66       | 71       | Total       | 85th Percent | 95th Percent |
|--------------------|------------|-----------|------------|------------|-------------|-------------|------------|-----------|-----------|----------|----------|----------|----------|-------------|--------------|--------------|
| 01/04/23           | 0          | 0         | 1          | 1          | 7           | 5           | 3          | 2         | 0         | 0        | 0        | 0        | 0        | 19          | 43           | 47           |
| 01:00              | 0          | 0         | 0          | 0          | 2           | 2           | 1          | 1         | 0         | 0        | 0        | 0        | 0        | 6           | 45           | 48           |
| 02:00              | 0          | 0         | 0          | 0          | 1           | 1           | 0          | 2         | 0         | 0        | 0        | 0        | 0        | 4           | 48           | 49           |
| 03:00              | 0          | 0         | 0          | 0          | 1           | 2           | 2          | 2         | 0         | 0        | 0        | 0        | 0        | 7           | 47           | 49           |
| 04:00              | 0          | 0         | 0          | 2          | 4           | 5           | 5          | 0         | 0         | 0        | 0        | 0        | 0        | 16          | 42           | 44           |
| 05:00              | 0          | 2         | 2          | 1          | 11          | 30          | 16         | 6         | 1         | 0        | 0        | 0        | 0        | 69          | 43           | 47           |
| 06:00              | 3          | 1         | 0          | 15         | 81          | 118         | 28         | 9         | 2         | 1        | 0        | 0        | 0        | 258         | 40           | 44           |
| 07:00              | 7          | 4         | 23         | 73         | 132         | 136         | 25         | 3         | 0         | 0        | 0        | 0        | 0        | 403         | 38           | 41           |
| 08:00              | 13         | 1         | 8          | 59         | 140         | 135         | 31         | 1         | 1         | 1        | 0        | 0        | 0        | 390         | 39           | 42           |
| 09:00              | 15         | 9         | 14         | 43         | 125         | 102         | 21         | 5         | 0         | 0        | 0        | 0        | 0        | 334         | 38           | 42           |
| 10:00              | 12         | 0         | 10         | 39         | 125         | 124         | 25         | 4         | 2         | 0        | 0        | 0        | 0        | 341         | 39           | 42           |
| 11:00              | 18         | 7         | 25         | 78         | 143         | 119         | 28         | 5         | 0         | 0        | 0        | 0        | 0        | 423         | 38           | 42           |
| 12 PM              | 14         | 5         | 29         | 55         | 146         | 103         | 31         | 6         | 1         | 0        | 0        | 0        | 0        | 390         | 39           | 42           |
| 13:00              | 20         | 6         | 22         | 62         | 161         | 113         | 25         | 0         | 0         | 0        | 0        | 0        | 0        | 409         | 38           | 40           |
| 14:00              | 12         | 5         | 21         | 58         | 113         | 132         | 26         | 7         | 1         | 1        | 0        | 0        | 0        | 376         | 39           | 43           |
| 15:00              | 15         | 6         | 17         | 78         | 157         | 111         | 20         | 2         | 1         | 0        | 0        | 0        | 0        | 407         | 38           | 40           |
| 16:00              | 23         | 2         | 15         | 44         | 115         | 122         | 33         | 4         | 0         | 0        | 0        | 0        | 0        | 358         | 39           | 42           |
| 17:00              | 11         | 1         | 18         | 62         | 147         | 107         | 22         | 6         | 0         | 0        | 0        | 0        | 0        | 374         | 38           | 42           |
| 18:00              | 10         | 0         | 14         | 30         | 110         | 105         | 14         | 3         | 0         | 0        | 0        | 0        | 0        | 286         | 38           | 40           |
| 19:00              | 3          | 2         | 6          | 28         | 85          | 68          | 15         | 7         | 1         | 0        | 0        | 0        | 0        | 215         | 39           | 44           |
| 20:00              | 1          | 2         | 7          | 23         | 50          | 48          | 19         | 4         | 0         | 0        | 0        | 0        | 0        | 154         | 39           | 44           |
| 21:00              | 1          | 1         | 4          | 7          | 33          | 53          | 13         | 1         | 0         | 0        | 0        | 0        | 0        | 113         | 39           | 43           |
| 22:00              | 0          | 2         | 1          | 1          | 9           | 16          | 10         | 1         | 1         | 0        | 0        | 0        | 0        | 41          | 42           | 44           |
| 23:00              | 0          | 0         | 0          | 0          | 7           | 11          | 1          | 0         | 0         | 0        | 0        | 0        | 0        | 19          | 39           | 40           |
| <b>Total</b>       | <b>178</b> | <b>56</b> | <b>237</b> | <b>759</b> | <b>1905</b> | <b>1768</b> | <b>414</b> | <b>81</b> | <b>11</b> | <b>3</b> | <b>0</b> | <b>0</b> | <b>0</b> | <b>5412</b> |              |              |
| Percent            | 3.3%       | 1.0%      | 4.4%       | 14.0%      | 35.2%       | 32.7%       | 7.6%       | 1.5%      | 0.2%      | 0.1%     | 0.0%     | 0.0%     | 0.0%     |             |              |              |
| AM Peak            | 11:00      | 09:00     | 11:00      | 11:00      | 11:00       | 07:00       | 08:00      | 06:00     | 06:00     | 06:00    |          |          |          | 11:00       |              |              |
| Vol.               | 18         | 9         | 25         | 78         | 143         | 136         | 31         | 9         | 2         | 1        |          |          |          | 423         |              |              |
| PM Peak            | 16:00      | 13:00     | 12:00      | 15:00      | 13:00       | 14:00       | 16:00      | 14:00     | 12:00     | 14:00    |          |          |          | 13:00       |              |              |
| Vol.               | 23         | 6         | 29         | 78         | 161         | 132         | 33         | 7         | 1         | 1        |          |          |          | 409         |              |              |
| <b>Grand Total</b> | <b>178</b> | <b>56</b> | <b>237</b> | <b>759</b> | <b>1905</b> | <b>1768</b> | <b>414</b> | <b>81</b> | <b>11</b> | <b>3</b> | <b>0</b> | <b>0</b> | <b>0</b> | <b>5412</b> |              |              |
| Percent            | 3.3%       | 1.0%      | 4.4%       | 14.0%      | 35.2%       | 32.7%       | 7.6%       | 1.5%      | 0.2%      | 0.1%     | 0.0%     | 0.0%     | 0.0%     |             |              |              |

15th Percentile : 27 MPH  
50th Percentile : 33 MPH  
85th Percentile : 39 MPH  
95th Percentile : 42 MPH

Stats  
10 MPH Pace Speed : 31-40 MPH  
Number of Vehicles > 35 MPH : 2277  
Percent of Vehicles > 35 MPH : 42.1%  
Mean Speed(Average) : 34 MPH



**Transportation Data Corporation**

Main Street (Route 28)  
south of Burger King Driveway  
City, State: Reading, MA  
Client: McM/Shana Gare

Mario Perone, mperone1@verizon.net  
tel (781) 587-0086 cell (781) 439-4999

05660Avolume  
Site Code: Y-22C20.11

| Start Time     | 04-Jan-23<br>Wed | NB         |           | Hour Totals |           | SB      |           | Hour Totals |           | Combined Totals |           |
|----------------|------------------|------------|-----------|-------------|-----------|---------|-----------|-------------|-----------|-----------------|-----------|
|                |                  | Morning    | Afternoon | Morning     | Afternoon | Morning | Afternoon | Morning     | Afternoon | Morning         | Afternoon |
| 12:00          |                  | 6          | 129       |             |           | 9       | 82        |             |           |                 |           |
| 12:15          |                  | 4          | 119       |             |           | 5       | 96        |             |           |                 |           |
| 12:30          |                  | 2          | 110       |             |           | 2       | 102       |             |           |                 |           |
| 12:45          |                  | 1          | 107       | 13          | 465       | 3       | 110       | 19          | 390       | 32              | 855       |
| 01:00          |                  | 3          | 114       |             |           | 3       | 120       |             |           |                 |           |
| 01:15          |                  | 1          | 123       |             |           | 0       | 95        |             |           |                 |           |
| 01:30          |                  | 0          | 119       |             |           | 1       | 92        |             |           |                 |           |
| 01:45          |                  | 0          | 114       | 4           | 470       | 2       | 102       | 6           | 409       | 10              | 879       |
| 02:00          |                  | 4          | 117       |             |           | 1       | 86        |             |           |                 |           |
| 02:15          |                  | 2          | 112       |             |           | 1       | 99        |             |           |                 |           |
| 02:30          |                  | 1          | 114       |             |           | 1       | 96        |             |           |                 |           |
| 02:45          |                  | 1          | 118       | 8           | 461       | 1       | 95        | 4           | 376       | 12              | 837       |
| 03:00          |                  | 1          | 117       |             |           | 1       | 93        |             |           |                 |           |
| 03:15          |                  | 0          | 145       |             |           | 1       | 98        |             |           |                 |           |
| 03:30          |                  | 4          | 109       |             |           | 1       | 116       |             |           |                 |           |
| 03:45          |                  | 2          | 129       | 7           | 500       | 4       | 100       | 7           | 407       | 14              | 907       |
| 04:00          |                  | 0          | 101       |             |           | 2       | 96        |             |           |                 |           |
| 04:15          |                  | 3          | 137       |             |           | 1       | 83        |             |           |                 |           |
| 04:30          |                  | 1          | 125       |             |           | 6       | 86        |             |           |                 |           |
| 04:45          |                  | 5          | 128       | 9           | 491       | 7       | 93        | 16          | 358       | 25              | 849       |
| 05:00          |                  | 8          | 120       |             |           | 7       | 100       |             |           |                 |           |
| 05:15          |                  | 13         | 133       |             |           | 23      | 101       |             |           |                 |           |
| 05:30          |                  | 9          | 132       |             |           | 16      | 88        |             |           |                 |           |
| 05:45          |                  | 13         | 137       | 43          | 522       | 23      | 85        | 69          | 374       | 112             | 896       |
| 06:00          |                  | 16         | 99        |             |           | 41      | 84        |             |           |                 |           |
| 06:15          |                  | 24         | 101       |             |           | 61      | 70        |             |           |                 |           |
| 06:30          |                  | 31         | 73        |             |           | 65      | 69        |             |           |                 |           |
| 06:45          |                  | 46         | 75        | 117         | 348       | 91      | 63        | 258         | 286       | 375             | 634       |
| 07:00          |                  | 64         | 74        |             |           | 88      | 78        |             |           |                 |           |
| 07:15          |                  | 68         | 57        |             |           | 104     | 52        |             |           |                 |           |
| 07:30          |                  | 75         | 54        |             |           | 99      | 41        |             |           |                 |           |
| 07:45          |                  | 98         | 53        | 305         | 238       | 112     | 44        | 403         | 215       | 708             | 453       |
| 08:00          |                  | 114        | 39        |             |           | 102     | 51        |             |           |                 |           |
| 08:15          |                  | 91         | 38        |             |           | 92      | 38        |             |           |                 |           |
| 08:30          |                  | 95         | 27        |             |           | 101     | 36        |             |           |                 |           |
| 08:45          |                  | 100        | 17        | 400         | 121       | 95      | 29        | 390         | 154       | 790             | 275       |
| 09:00          |                  | 77         | 22        |             |           | 94      | 37        |             |           |                 |           |
| 09:15          |                  | 77         | 20        |             |           | 76      | 26        |             |           |                 |           |
| 09:30          |                  | 83         | 17        |             |           | 85      | 23        |             |           |                 |           |
| 09:45          |                  | 112        | 23        | 349         | 82        | 79      | 27        | 334         | 113       | 683             | 195       |
| 10:00          |                  | 82         | 9         |             |           | 72      | 10        |             |           |                 |           |
| 10:15          |                  | 103        | 14        |             |           | 95      | 15        |             |           |                 |           |
| 10:30          |                  | 94         | 11        |             |           | 82      | 12        |             |           |                 |           |
| 10:45          |                  | 106        | 9         | 385         | 43        | 92      | 4         | 341         | 41        | 726             | 84        |
| 11:00          |                  | 95         | 4         |             |           | 108     | 5         |             |           |                 |           |
| 11:15          |                  | 97         | 8         |             |           | 102     | 6         |             |           |                 |           |
| 11:30          |                  | 109        | 5         |             |           | 102     | 4         |             |           |                 |           |
| 11:45          |                  | 112        | 5         | 413         | 22        | 111     | 4         | 423         | 19        | 836             | 41        |
| Total          |                  | 2053       | 3763      |             |           | 2270    | 3142      |             |           | 4323            | 6905      |
| Combined Total |                  | 5816       |           |             |           | 5412    |           |             |           | 11228           |           |
| Percentage     | 0.0%             |            |           |             |           |         |           |             |           |                 |           |
| Total Percent  |                  | 2053       | 3763      |             |           | 2270    | 3142      |             |           | 4323            | 6905      |
|                |                  | 35.3%      | 64.7%     |             |           | 41.9%   | 58.1%     |             |           | 38.5%           | 61.5%     |
| ADT            |                  | ADT 11,228 |           | AADT 11,228 |           |         |           |             |           |                 |           |



## **APPENDIX B**

### **MassDOT Seasonal Adjustment Data**

Massachusetts Highway Department  
 Statewide Traffic Data Collection  
 2019 Weekday Seasonal Factors

| Factor Group | JAN  | FEB  | MAR  | APR  | MAY  | JUN  | JUL  | AUG  | SEP  | OCT  | NOV  | DEC  | Axle Factor |
|--------------|------|------|------|------|------|------|------|------|------|------|------|------|-------------|
| R1           | 1.22 | 1.14 | 1.12 | 1.06 | 1.00 | 0.96 | 0.87 | 0.85 | 0.96 | 0.99 | 1.04 | 1.12 | 0.85        |
| R2           | 0.95 | 0.96 | 0.98 | 0.97 | 0.97 | 0.93 | 0.97 | 0.94 | 0.96 | 0.90 | 0.92 | 0.93 | 0.96        |
| R3           | 1.15 | 1.06 | 1.07 | 1.00 | 0.89 | 0.88 | 0.89 | 0.89 | 0.95 | 0.92 | 1.02 | 1.01 | 0.97        |
| R4-R7        | 1.09 | 1.09 | 1.11 | 1.02 | 0.96 | 0.92 | 0.89 | 0.89 | 0.99 | 0.98 | 1.09 | 1.13 | 0.98        |
| U1-Boston    | 1.03 | 1.01 | 0.98 | 0.94 | 0.94 | 0.92 | 0.95 | 0.93 | 0.94 | 0.94 | 0.97 | 1.04 | 0.96        |
| U1-Essex     | 1.09 | 1.06 | 1.03 | 0.99 | 0.94 | 0.90 | 0.88 | 0.86 | 0.93 | 0.94 | 0.99 | 1.06 | 0.93        |
| U1-Southeast | 1.06 | 1.05 | 1.01 | 0.97 | 0.95 | 0.93 | 0.93 | 0.90 | 0.94 | 0.94 | 0.98 | 1.04 | 0.98        |
| U1-West      | 1.19 | 1.14 | 1.09 | 0.95 | 0.92 | 0.89 | 0.89 | 0.86 | 0.91 | 0.95 | 0.97 | 1.07 | 0.84        |
| U1-Worcester | 1.02 | 1.04 | 0.97 | 0.94 | 0.93 | 0.91 | 0.95 | 0.91 | 0.93 | 0.92 | 0.95 | 1.10 | 0.88        |
| U2           | 1.01 | 1.00 | 0.94 | 0.93 | 0.91 | 0.89 | 0.93 | 0.90 | 0.90 | 0.91 | 0.94 | 1.02 | 0.99        |
| U3           | 1.06 | 1.03 | 0.98 | 0.94 | 0.93 | 0.91 | 0.95 | 0.91 | 0.92 | 0.93 | 0.97 | 1.00 | 0.98        |
| U4-U7        | 1.01 | 1.00 | 0.95 | 0.92 | 0.88 | 0.86 | 0.92 | 0.91 | 0.92 | 0.94 | 0.99 | 1.04 | 0.99        |
| Rec - East   | 1.04 | 1.16 | 1.12 | 0.98 | 0.92 | 0.88 | 0.77 | 0.81 | 0.94 | 1.02 | 1.08 | 1.12 | 0.99        |
| Rec - West   | 1.30 | 1.23 | 1.32 | 1.18 | 0.95 | 0.82 | 0.70 | 0.69 | 0.97 | 0.96 | 1.16 | 1.15 | 0.98        |

Round off:

0-999 = 10

>1000 = 100

U = Urban

R = Rural

1 - Interstate

2 - Freeway and Expressway

3 - Other Principal Arterial

4 - Minor Arterial

5 - Major Collector

6 - Minor Collector

7 - Local Road and Street

**Recreational - East Group** - Cape Cod (all towns) including the town of Plymouth south of Route 3A (stations 7014,7079,7080,7090,7091,7092,7093,7094,7095,7096,7097,7108 and 7178), Martha's Vineyard and Nantucket.

**Recreational - West Group** - Continuous Stations 2 and 189 including stations 1066,1067,1083,1084,1085,1086,1087,1088,1089,1090,1091,1092,1093,1094,1095,1096,1097,1098,1099,1100,1101,1102,1103,1104,1105,1106,1107,1108,1113, 1114,1116,2196,2197 and 2198.

**APPENDIX C**  
**Traffic Projection Model**

TRAFFIC PROJECTION MODEL

Weekday Morning Peak Hour  
Proposed Bank  
Reading, MA

| Intersection                                | Dir.   | Turn | 2023 Counted Volumes | Seasonal Adjustments Jan = 1.06 | Volume Balances | 2023 Existing Volumes | Background Growth 7 yrs (at 0.5% per year) | 459 Main Street Trips | 531 Main Street Trips | 6 Chute St Trips | 2030 No Build Volumes | New Passenger Vehicle Trips |             | New Passenger Vehicle Trips |            | Project New Trips TOTAL | Passby Trips | Existing Gas Station Trips Rerouting | 2030 Build Volumes |    |
|---|--|------|----------------------|---------------------------------|-----------------|-----------------------|--|-----------------------|-----------------------|------------------|-----------------------|-----------------------------|-------------|-----------------------------|------------|-------------------------|--------------|--------------------------------------|--------------------|----|
|   |  |      |                      |                                 |                 |                       |  |                       |                       |                  |                       | PERCENT ENTER               | Trips ENTER | PERCENT EXIT                | Trips EXIT |                         |              |                                      |                    |    |
| Main Street (Route 28) at Washington Street | EB   | L    | 43                   | 3                               |                 | 46                    | 2  | 0                     |                       |                  | 48                    |                             | 0           |                             | 0          | 0                       | -1           |                                      | 47                 |    |
|   | T  | L    | 108                  | 6                               |                 | 114                   | 4  | 0                     |                       |                  | 118                   | 25%                         | 2           |                             | 0          | 2                       | 1            |                                      | 121                |    |
|   |  | R    | L                    | 15                              | 1               |                       | 16   | 1                     | 0                     |                  | 18                    |                             | 0           |                             | 0          | 0                       |              |                                      | 18                 |    |
|   | WB   | L    | 54                   | 3                               |                 | 57                    | 2  | 2                     |                       |                  | 61                    |                             | 0           |                             | 0          | 0                       |              |                                      | 61                 |    |
|   |  | T    | L                    | 125                             | 8               |                       | 133  | 5                     | 0                     | 1                | 138                   |                             | 0           |                             | 0          | 0                       |              |                                      | 138                |    |
|   | R  | L    | 47                   | 3                               |                 | 50                    | 2  | 1                     |                       |                  | 53                    |                             | 0           |                             | 0          | 0                       |              |                                      | 53                 |    |
|   |  | L    | 52                   | 3                               |                 | 55                    | 2  | 1                     |                       |                  | 58                    |                             | 0           | 65%                         | 3          | 3                       | 0            | 6                                    | 67                 |    |
|   | T  | L    | 345                  | 21                              |                 | 366                   | 13   | 2                     | 3                     |                  | 384                   |                             | 0           | 15%                         | 1          | 1                       | 1            |                                      | 386                |    |
|   |  | R    | L                    | 52                              | 3               |                       | 55   | 2                     | 0                     |                  | 57                    |                             | 0           |                             | 0          | 0                       |              |                                      | 57                 |    |
|   | SB   | L    | 38                   | 2                               |                 | 40                    | 1  | 0                     |                       |                  | 41                    | 35%                         | 3           |                             | 0          | 3                       | 1            |                                      | 45                 |    |
|   |  | T    | L                    | 325                             | 20              |                       | 345  | 12                    | 1                     | 4                | 362                   |                             | 0           |                             | 0          | 0                       | -1           |                                      | 361                |    |
|   | R  | L    | 17                   | 1                               |                 | 18                    | 1  | 0                     |                       |                  | 19                    |                             | 0           |                             | 0          | 0                       |              |                                      | 19                 |    |
|   | Southern Site Driveway at Main Street (Route 28) | WB   | L                    | 4                               | 0               |                       | 4  | 0                     |                       |                  | 4                     |                             | 0           |                             | 0          | 0                       |              |                                      | -4                 | 0  |
|   |  | R    | L                    | 2                               | 0               |                       | 2  | 0                     |                       |                  | 2                     |                             | 0           |                             | 80%        | 4                       | 4            | 2                                    | 6                  | 14 |
| T   |  |      | L                    | 447                             | 27              |                       | 474  | 17                    | 3                     | 3                | 497                   |                             | 0           |                             | 0          | 0                       | -1           |                                      | 496                |    |
| R   |  | L    | 8                    | 0                               |                 | 8                     | 0  |                       |                       | 8                | 40%                   | 3                           |             | 0                           | 3          | 1                       | 4            | 16                                   |                    |    |
| SB  |  | L    | 0                    | 0                               |                 | 0                     | 0  |                       |                       | 0                |                       | 0                           |             | 0                           | 0          |                         |              | 0                                    |                    |    |
| T   | L  | 394  | 24                   |                                 | 418             | 15                    | 3  | 4                     | 1                     | 441              |                       | 0                           |             | 0                           | 0          |                         |              | 441                                  |                    |    |
| Eastern Site Driveway at Washington Street  | EB   | T    | 196                  | 12                              |                 | 208                   | 7  | 0                     |                       | 215              |                       | 0                           |             | 0                           | 0          |                         |              |                                      | 215                |    |
|   | R  | L    | 2                    | 0                               |                 | 2                     | 0  |                       |                       | 2                | 60%                   | 5                           |             | 0                           | 5          | 2                       |              |                                      | 9                  |    |
|   |  | L    | 4                    | 0                               |                 | 4                     | 0  |                       |                       | 4                |                       | 0                           |             | 0                           | 0          |                         |              | -4                                   | 0                  |    |
|   | T  | L    | 224                  | 13                              |                 | 237                   | 8  | 3                     |                       | 248              |                       | 0                           |             | 0                           | 0          |                         |              |                                      | 248                |    |
|   | NB   | L    | 2                    | 0                               |                 | 2                     | 0  |                       |                       | 2                |                       | 0                           |             | 0                           | 0          |                         |              |                                      | 0                  |    |
| R   | L  | 2    | 0                    |                                 | 2               | 0                     |  |                       | 2                     |                  | 0                     | 20%                         | 1           | 1                           | 1          |                         |              | 4                                    |                    |    |

Peak Hour: 7:45 AM-8:45 AM



**TRAFFIC PROJECTION MODEL**

**Weekday Afternoon Peak Hour  
Proposed Bank  
Reading, MA**

| Intersection                                     | Dir. | Turn | 2023 Counted Volumes | Seasonal Adjustments Jan = 1.06 | Volume Balances | 2023 Existing Volumes | Background Growth 7 yrs (at 0.5% per year) | 459 Main Street Trips | 531 Main Street Trips | 6 Chute Street Trips | 2030 No Build Volumes | New Passenger Vehicle Trips |             |              | Project New Trips TOTAL | Passby Trips | Existing Gas Station Trips Rerouting | 2030 Build Volumes |     |     |
|--|------|------|----------------------|---------------------------------|-----------------|-----------------------|--|-----------------------|-----------------------|----------------------|-----------------------|-----------------------------|-------------|--------------|-------------------------|--------------|--------------------------------------|--------------------|-----|-----|
|  |      |      |                      |                                 |                 |                       |  |                       |                       |                      |                       | PERCENT ENTER               | Trips ENTER | PERCENT EXIT |                         |              |                                      |                    |     |     |
| Main Street (Route 28) at Washington Street      | EB   | L    | 45                   | 3                               |                 | 48                    | 2  | 0                     |                       |                      | 50                    |                             | 0           | 0            | 0                       | -2           |                                      | 48                 |     |     |
|  |      | T    | 172                  | 10                              |                 | 182                   | 6  | 1                     |                       |                      | 189                   | 25%                         | 3           | 0            | 3                       | 2            |                                      | 194                |     |     |
|  |      | R    | 18                   | 1                               |                 | 19                    | 1  | 0                     |                       |                      | 20                    |                             | 0           | 0            | 0                       |              |                                      | 20                 |     |     |
|  |      | WB   | L                    | 60                              | 4               |                       | 64   | 2                     | 1                     |                      |                       | 67                          |             | 0            | 0                       | 0            |                                      |                    | 67  |     |
|  |      |      | T                    | 196                             | 12              |                       | 208  | 7                     | 0                     |                      |                       | 215                         |             | 0            | 0                       | 0            |                                      |                    | 215 |     |
|  |      |      | R                    | 74                              | 4               |                       | 78   | 3                     | 2                     |                      |                       | 83                          |             | 0            | 0                       | 0            |                                      |                    | 83  |     |
|  |      | NB   | L                    | 112                             | 7               |                       | 119  | 4                     | 1                     |                      | 1                     | 125                         |             | 0            | 65%                     | 10           | 10                                   | 1                  | 2   | 138 |
|  |      |      | T                    | 498                             | 30              |                       | 528  | 19                    | 3                     |                      | 6                     | 556                         |             | 0            | 15%                     | 2            | 2                                    | 2                  | 560 |     |
|  |      |      | R                    | 56                              | 3               |                       | 59   | 2                     | 0                     |                      |                       | 61                          |             | 0            | 0                       | 0            |                                      |                    | 61  |     |
|  |      | SB   | L                    | 44                              | 3               |                       | 47   | 2                     | 0                     |                      |                       | 49                          | 35%         | 4            | 0                       | 4            | 2                                    |                    | 55  |     |
|  |      |      | T                    | 289                             | 17              |                       | 306  | 11                    | 1                     |                      | 5                     | 323                         |             | 0            | 0                       | 0            | -2                                   |                    | 321 |     |
|  |      |      | R                    | 14                              | 1               |                       | 15   | 1                     | 0                     |                      |                       | 16                          |             | 0            | 0                       | 0            |                                      |                    | 16  |     |
| Southern Site Driveway at Main Street (Route 28) | WB   | L    | 2                    | 0                               |                 | 2                     | 0  |                       |                       |                      | 2                     |                             | 0           | 0            | 0                       |              | -2                                   | 0                  |     |     |
|  |      | R    | 2                    | 0                               |                 | 2                     | 0  |                       |                       |                      | 2                     |                             | 0           | 80%          | 12                      | 6            | 2                                    | 22                 |     |     |
|  |      | NB   | T                    | 664                             | 40              |                       | 704  | 25                    | 4                     |                      | 6                     | 740                         |             | 0            | 0                       | -3           |                                      | 737                |     |     |
|  |      |      | R                    | 4                               | 0               |                       | 4  | 0                     |                       |                      |                       | 4                           | 40%         | 4            | 0                       | 3            | 6                                    | 17                 |     |     |
|  |      | SB   | L                    | 0                               | 0               |                       | 0  | 0                     |                       |                      |                       | 0                           |             | 0            | 0                       | 0            |                                      | 0                  |     |     |
|  |      | T    | 367                  | 22                              |                 | 389                   | 14   | 2                     |                       | 5                    | 410                   |                             | 0           | 0            | 0                       |              | 410                                  |                    |     |     |
| Eastern Site Driveway at Washington Street       | EB   | T    | 266                  | 16                              |                 | 282                   | 10   | 1                     |                       |                      | 293                   |                             | 0           | 0            | 0                       |              |                                      | 293                |     |     |
|  |      | R    | 6                    | 0                               |                 | 6                     | 0  |                       |                       |                      | 6                     | 60%                         | 7           | 0            | 7                       | 4            |                                      | 17                 |     |     |
|  |      | WB   | L                    | 6                               | 0               |                       | 6  | 0                     |                       |                      | 6                     |                             | 0           | 0            | 0                       |              | -6                                   | 0                  |     |     |
|  |      |      | T                    | 330                             | 20              |                       | 350  | 12                    | 3                     |                      |                       | 365                         |             | 0            | 0                       | 0            |                                      | 365                |     |     |
|  |      | NB   | L                    | 0                               | 0               |                       | 0  | 0                     |                       |                      |                       | 0                           |             | 0            | 0                       |              | 0                                    | 0                  |     |     |
|  |      | R    | 6                    | 0                               |                 | 6                     | 0  |                       |                       |                      | 6                     |                             | 0           | 20%          | 3                       | 1            |                                      | 10                 |     |     |

Peak Hour: 5:00 PM-6:00 PM

**APPENDIX D**  
**Crash Summary**

# CRASH ANALYSIS

## Proposed Bank

## Reading, MA

|                     | Washington Street<br>(Route 9) at South Street | Main Street (Route 28) at<br>Southern Driveway | Washington Street at<br>Eastern Driveway |
|---------------------|--|--|--|
| <b>Year</b>         |  |  |  |
| 2016                | 9  | 0  | 0  |
| 2017                | 19   | 0  | 0  |
| 2018                | 4  | 0  | 0  |
| 2019                | 11   | 1  | 0  |
| 2020                | 3  | 0  | 1  |
| <b>Type</b>         |  |  |  |
| Angle               | 23   | 0  | 0  |
| Rear-end            | 13   | 0  | 0  |
| Sideswipe           | 4  | 1  | 0  |
| Head-on             | 2  | 0  | 0  |
| Single Vehicle      | 4  | 0  | 1  |
| <b>Severity</b>     |  |  |  |
| Property Damage     | 42   | 1  | 1  |
| Personal Injury     | 2  | 0  | 0  |
| Fatality            | 0  | 0  | 0  |
| Unknown             | 2  | 0  | 0  |
| <b>Weather</b>      |  |  |  |
| Clear               | 31   | 1  | 1  |
| Cloudy              | 7  | 0  | 0  |
| Rain                | 6  | 0  | 0  |
| Snow                | 1  | 0  | 0  |
| Sleet               | 1  | 0  | 0  |
| <b>Road Surface</b> |  |  |  |
| Dry                 | 36   | 1  | 1  |
| Wet                 | 9  | 0  | 0  |
| Ice                 | 0  | 0  | 0  |
| Snow                | 0  | 0  | 0  |
| Slush               | 1  | 0  | 0  |
| <b>Time</b>         |  |  |  |
| 7:00 AM to 9:00 AM  | 7  | 0  | 0  |
| 9:00 AM to 4:00 PM  | 24   | 1  | 1  |
| 4:00 PM to 6:00 PM  | 5  | 0  | 0  |
| 6:00 PM to 7:00 AM  | 10   | 0  | 0  |
| <b>Total</b>        | <b>46</b>                                      | <b>1</b>                                       | <b>1</b>                                 |
| Crash Rate          | 1.36   | 0.03   | 0.08                                     |
| State Average       | 0.78   | 0.57   | 0.57                                     |
| District 3 Average  | 0.89   | 0.61   | 0.61                                     |

Source: MassDOT

## **APPENDIX E**

### **Highway Capacity Manual Methodologies**



## CAPACITY/LEVEL-OF-SERVICE ANALYSES METHODOLOGY

The detailed capacity/level-of-service analysis contained in this traffic impact study was performed in accordance with the standard techniques contained in the *Highway Capacity Manual*.<sup>(1)</sup> By definition, capacity represents “the maximum rate of flow that can reasonably be expected to pass a point on a uniform section of a lane or roadway under prevailing roadway, traffic, and control conditions.” The level of functioning of an intersection or a uniform section of a lane or roadway can be expressed in terms of levels of service. Level of service (LOS) is defined as “a qualitative measure describing operational conditions within a traffic stream, and their perception by motorists and/or passengers”. Such measures include “speed and travel time, freedom to maneuver, traffic interruptions, comfort and convenience, and safety.”

At unsignalized intersections, a methodology for evaluating the relative functioning of intersections controlled by stop or yield signs has been developed, and is based on several assumptions, including:

- Major street flows are not affected by the minor (stop-sign controlled) street movements.
- Left turns from the major street to the minor street are influenced only by opposing major street through flow.
- Minor street left turns are impeded by all major street traffic plus opposing minor street traffic.
- Minor street through traffic is impeded by all major street traffic.
- Minor street right turns are impeded only by the major street traffic coming from the left.

The concept of stop-controlled or yield-controlled intersection analysis is based on the estimate of average total delay on minor streets. The methodology of analysis relies on three elements: the size and distribution of gaps in the major traffic stream, the usefulness of these gaps to the minor stream drivers, and the relative priority of the various traffic streams at the intersection. The results of the analysis provide an estimate of average total delay for the various critical movements at the unsignalized intersections. Correlation between average total delay and the respective levels of service are provided for unsignalized intersections as follows:

---

(1) *Transportation Research Board, Highway Capacity Manual 2010, published by the Transportation Research Board, Washington, DC, 2010.*

*Unsignalized Intersections*

| Level of Service | Control Delay Per Vehicle<br>(seconds) |
|------------------|--|
| A                | 0 – 10                                 |
| B                | >10 – 15                               |
| C                | >15 – 25                               |
| D                | >25 – 35                               |
| E                | >35 – 50                               |
| F                | > 50                                   |

At signalized intersections, an additional element must be considered: time allocation. Level of service is based on the average control delay per vehicle for various movements within the intersection. Volume/capacity relationships also affect the operations of signalized intersections. Thus, both volume/capacity and delay must be considered to evaluate the overall operation of a signalized intersection. Correlation between average delay per vehicle and the respective levels of service are provided for signalized intersections as follows:

*Signalized Intersections*

| Level of Service | Control Delay Per Vehicle<br>(seconds) |
|------------------|--|
| A                | $\leq 10$                              |
| B                | >10 – 20                               |
| C                | >20 – 35                               |
| D                | >35 – 55                               |
| E                | >55 – 80                               |
| F                | > 80                                   |

## **APPENDIX F**

### **2023 Existing Capacity/Level-of-Service Analysis**

Proposed Bank, Reading  
1: Main Street (Route 28) & Washington Street

2023 Existing  
Weekday Morning Peak Hour



| Lane Group              | EBL   | EBT  | EBR  | WBL   | WBT   | WBR  | NBL    | NBT   | NBR  | SBL    | SBT   | SBR  |
|-------------------------|-------|------|------|-------|-------|------|--------|-------|------|--------|-------|------|
| Lane Configurations     |       |      |      |       |       |      |        |       |      |        |       |      |
| Traffic Volume (vph)    | 46    | 114  | 16   | 57    | 133   | 50   | 55     | 366   | 55   | 40     | 345   | 18   |
| Future Volume (vph)     | 46    | 114  | 16   | 57    | 133   | 50   | 55     | 366   | 55   | 40     | 345   | 18   |
| Ideal Flow (vphpl)      | 1900  | 1900 | 1900 | 1900  | 1900  | 1900 | 1900   | 1900  | 1900 | 1900   | 1900  | 1900 |
| Lane Width (ft)         | 11    | 11   | 11   | 11    | 11    | 11   | 11     | 11    | 11   | 11     | 11    | 11   |
| Storage Length (ft)     | 95    |      | 0    | 0     |       | 0    | 0      |       | 0    | 0      |       | 0    |
| Storage Lanes           | 1     |      | 0    | 0     |       | 0    | 0      |       | 0    | 0      |       | 0    |
| Taper Length (ft)       | 25    |      |      | 25    |       |      | 25     |       |      | 25     |       |      |
| Satd. Flow (prot)       | 1711  | 1783 | 0    | 0     | 1737  | 0    | 0      | 3356  | 0    | 0      | 3336  | 0    |
| Flt Permitted           | 0.394 |      |      |       | 0.874 |      |        | 0.826 |      |        | 0.775 |      |
| Satd. Flow (perm)       | 709   | 1783 | 0    | 0     | 1536  | 0    | 0      | 2789  | 0    | 0      | 2597  | 0    |
| Right Turn on Red       |       |      | No   |       |       | No   |        |       | No   |        |       | No   |
| Satd. Flow (RTOR)       |       |      |      |       |       |      |        |       |      |        |       |      |
| Link Speed (mph)        |       | 25   |      |       | 30    |      |        | 30    |      |        | 30    |      |
| Link Distance (ft)      |       | 226  |      |       | 149   |      |        | 151   |      |        | 242   |      |
| Travel Time (s)         |       | 6.2  |      |       | 3.4   |      |        | 3.4   |      |        | 5.5   |      |
| Confl. Peds. (#/hr)     |       |      | 2    | 2     |       |      |        |       | 7    | 7      |       |      |
| Peak Hour Factor        | 0.78  | 0.78 | 0.78 | 0.75  | 0.75  | 0.75 | 0.90   | 0.90  | 0.90 | 0.94   | 0.94  | 0.94 |
| Heavy Vehicles (%)      | 2%    | 1%   | 0%   | 0%    | 2%    | 2%   | 2%     | 1%    | 2%   | 8%     | 3%    | 0%   |
| Shared Lane Traffic (%) |       |      |      |       |       |      |        |       |      |        |       |      |
| Lane Group Flow (vph)   | 59    | 167  | 0    | 0     | 320   | 0    | 0      | 529   | 0    | 0      | 429   | 0    |
| Turn Type               | pm+pt | NA   |      | Perm  | NA    |      | custom | NA    |      | custom | NA    |      |
| Protected Phases        | 5     | 5 6  |      |       | 6     |      | 3      | 2 3   |      | 1      | 1 2   |      |
| Permitted Phases        | 5 6   |      |      | 6     |       |      | 2      |       |      | 2      |       |      |
| Detector Phase          | 5     | 5 6  |      | 6     | 6     |      | 3      | 2 3   |      | 1      | 1 2   |      |
| Switch Phase            |       |      |      |       |       |      |        |       |      |        |       |      |
| Minimum Initial (s)     | 6.0   |      |      | 10.0  | 10.0  |      | 6.0    |       |      | 6.0    |       |      |
| Minimum Split (s)       | 11.0  |      |      | 15.0  | 15.0  |      | 13.0   |       |      | 13.0   |       |      |
| Total Split (s)         | 18.0  |      |      | 45.0  | 45.0  |      | 17.0   |       |      | 17.0   |       |      |
| Total Split (%)         | 10.8% |      |      | 27.1% | 27.1% |      | 10.2%  |       |      | 10.2%  |       |      |
| Yellow Time (s)         | 4.0   |      |      | 4.0   | 4.0   |      | 4.0    |       |      | 4.0    |       |      |
| All-Red Time (s)        | 1.0   |      |      | 1.0   | 1.0   |      | 3.0    |       |      | 3.0    |       |      |
| Lost Time Adjust (s)    | 0.0   |      |      |       | 0.0   |      |        |       |      |        |       |      |
| Total Lost Time (s)     | 5.0   |      |      |       | 5.0   |      |        |       |      |        |       |      |
| Lead/Lag                | Lead  |      |      | Lag   | Lag   |      | Lead   |       |      | Lead   |       |      |
| Lead-Lag Optimize?      | Yes   |      |      | Yes   | Yes   |      | Yes    |       |      | Yes    |       |      |
| Recall Mode             | None  |      |      | None  | None  |      | None   |       |      | None   |       |      |
| Act Effct Green (s)     | 42.1  | 47.3 |      |       | 31.0  |      |        | 33.6  |      |        | 37.4  |      |
| Actuated g/C Ratio      | 0.35  | 0.39 |      |       | 0.26  |      |        | 0.28  |      |        | 0.31  |      |
| v/c Ratio               | 0.18  | 0.24 |      |       | 0.82  |      |        | 0.66  |      |        | 0.50  |      |
| Control Delay           | 28.0  | 28.2 |      |       | 61.6  |      |        | 39.4  |      |        | 33.7  |      |
| Queue Delay             | 0.0   | 0.0  |      |       | 0.0   |      |        | 0.0   |      |        | 0.0   |      |
| Total Delay             | 28.0  | 28.2 |      |       | 61.6  |      |        | 39.4  |      |        | 33.7  |      |
| LOS                     | C     | C    |      |       | E     |      |        | D     |      |        | C     |      |
| Approach Delay          |       | 28.2 |      |       | 61.6  |      |        | 39.4  |      |        | 33.7  |      |
| Approach LOS            |       | C    |      |       | E     |      |        | D     |      |        | C     |      |
| Queue Length 50th (ft)  | 27    | 80   |      |       | 223   |      |        | 163   |      |        | 121   |      |
| Queue Length 95th (ft)  | 67    | 162  |      |       | 361   |      |        | 295   |      |        | 231   |      |
| Internal Link Dist (ft) |       | 146  |      |       | 69    |      |        | 71    |      |        | 162   |      |



| Lane Group              | Ø2   | Ø4   |
|-------------------------|------|------|
| Lane Configurations     |      |      |
| Traffic Volume (vph)    |      |      |
| Future Volume (vph)     |      |      |
| Ideal Flow (vphpl)      |      |      |
| Lane Width (ft)         |      |      |
| Storage Length (ft)     |      |      |
| Storage Lanes           |      |      |
| Taper Length (ft)       |      |      |
| Satd. Flow (prot)       |      |      |
| Flt Permitted           |      |      |
| Satd. Flow (perm)       |      |      |
| Right Turn on Red       |      |      |
| Satd. Flow (RTOR)       |      |      |
| Link Speed (mph)        |      |      |
| Link Distance (ft)      |      |      |
| Travel Time (s)         |      |      |
| Confl. Peds. (#/hr)     |      |      |
| Peak Hour Factor        |      |      |
| Heavy Vehicles (%)      |      |      |
| Shared Lane Traffic (%) |      |      |
| Lane Group Flow (vph)   |      |      |
| Turn Type               |      |      |
| Protected Phases        | 2    | 4    |
| Permitted Phases        |      |      |
| Detector Phase          |      |      |
| Switch Phase            |      |      |
| Minimum Initial (s)     | 8.0  | 6.0  |
| Minimum Split (s)       | 17.0 | 22.0 |
| Total Split (s)         | 47.0 | 22.0 |
| Total Split (%)         | 28%  | 13%  |
| Yellow Time (s)         | 4.0  | 3.0  |
| All-Red Time (s)        | 3.0  | 1.0  |
| Lost Time Adjust (s)    |      |      |
| Total Lost Time (s)     |      |      |
| Lead/Lag                | Lag  | Lag  |
| Lead-Lag Optimize?      | Yes  | Yes  |
| Recall Mode             | Min  | None |
| Act Effct Green (s)     |      |      |
| Actuated g/C Ratio      |      |      |
| v/c Ratio               |      |      |
| Control Delay           |      |      |
| Queue Delay             |      |      |
| Total Delay             |      |      |
| LOS                     |      |      |
| Approach Delay          |      |      |
| Approach LOS            |      |      |
| Queue Length 50th (ft)  |      |      |
| Queue Length 95th (ft)  |      |      |
| Internal Link Dist (ft) |      |      |

Proposed Bank, Reading  
 1: Main Street (Route 28) & Washington Street

2023 Existing  
 Weekday Morning Peak Hour

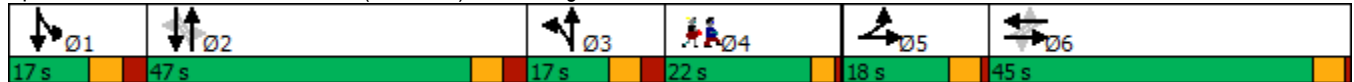


| Lane Group             | EBL  | EBT  | EBR | WBL | WBT  | WBR | NBL | NBT  | NBR | SBL | SBT  | SBR |
|------------------------|------|------|-----|-----|------|-----|-----|------|-----|-----|------|-----|
| Turn Bay Length (ft)   | 95   |      |     |     |      |     |     |      |     |     |      |     |
| Base Capacity (vph)    | 370  | 830  |     |     | 525  |     |     | 1087 |     |     | 1172 |     |
| Starvation Cap Reductn | 0    | 0    |     |     | 0    |     |     | 0    |     |     | 0    |     |
| Spillback Cap Reductn  | 0    | 0    |     |     | 0    |     |     | 0    |     |     | 0    |     |
| Storage Cap Reductn    | 0    | 0    |     |     | 0    |     |     | 0    |     |     | 0    |     |
| Reduced v/c Ratio      | 0.16 | 0.20 |     |     | 0.61 |     |     | 0.49 |     |     | 0.37 |     |

Intersection Summary

|                                    |                        |
|------------------------------------|------------------------|
| Area Type:                         | Other                  |
| Cycle Length:                      | 166                    |
| Actuated Cycle Length:             | 121.5                  |
| Natural Cycle:                     | 105                    |
| Control Type:                      | Actuated-Uncoordinated |
| Maximum v/c Ratio:                 | 0.82                   |
| Intersection Signal Delay:         | 40.8                   |
| Intersection LOS:                  | D                      |
| Intersection Capacity Utilization: | 65.0%                  |
| ICU Level of Service:              | C                      |
| Analysis Period (min):             | 15                     |

Splits and Phases: 1: Main Street (Route 28) & Washington Street



---

| Lane Group             | Ø2 | Ø4 |
|------------------------|----|----|
| Turn Bay Length (ft)   |    |    |
| Base Capacity (vph)    |    |    |
| Starvation Cap Reductn |    |    |
| Spillback Cap Reductn  |    |    |
| Storage Cap Reductn    |    |    |
| Reduced v/c Ratio      |    |    |
| Intersection Summary   |    |    |

---

Proposed Bank, Reading  
2: Main Street (Route 28) & Southern Site Driveway

2023 Existing  
Weekday Morning Peak Hour

| Intersection             |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh         | 0.2  |      |      |      |      |      |
| Movement                 | WBL  | WBR  | NBT  | NBR  | SBL  | SBT  |
| Lane Configurations      |      |      |      |      |      |      |
| Traffic Vol, veh/h       | 4    | 2    | 474  | 8    | 0    | 418  |
| Future Vol, veh/h        | 4    | 2    | 474  | 8    | 0    | 418  |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Stop | Stop | Free | Free | Free | Free |
| RT Channelized           | -    | None | -    | None | -    | None |
| Storage Length           | 0    | -    | -    | -    | -    | -    |
| Veh in Median Storage, # | 0    | -    | 0    | -    | -    | 0    |
| Grade, %                 | 0    | -    | 0    | -    | -    | 0    |
| Peak Hour Factor         | 50   | 50   | 90   | 90   | 95   | 95   |
| Heavy Vehicles, %        | 0    | 0    | 2    | 0    | 0    | 3    |
| Mvmt Flow                | 8    | 4    | 527  | 9    | 0    | 440  |

| Major/Minor          | Minor1 | Major1 | Major2 |   |      |   |
|----------------------|--------|--------|--------|---|------|---|
| Conflicting Flow All | 752    | 268    | 0      | 0 | 536  | 0 |
| Stage 1              | 532    | -      | -      | - | -    | - |
| Stage 2              | 220    | -      | -      | - | -    | - |
| Critical Hdwy        | 6.8    | 6.9    | -      | - | 4.1  | - |
| Critical Hdwy Stg 1  | 5.8    | -      | -      | - | -    | - |
| Critical Hdwy Stg 2  | 5.8    | -      | -      | - | -    | - |
| Follow-up Hdwy       | 3.5    | 3.3    | -      | - | 2.2  | - |
| Pot Cap-1 Maneuver   | 350    | 736    | -      | - | 1042 | - |
| Stage 1              | 559    | -      | -      | - | -    | - |
| Stage 2              | 802    | -      | -      | - | -    | - |
| Platoon blocked, %   |        |        | -      | - |      | - |
| Mov Cap-1 Maneuver   | 350    | 736    | -      | - | 1042 | - |
| Mov Cap-2 Maneuver   | 350    | -      | -      | - | -    | - |
| Stage 1              | 559    | -      | -      | - | -    | - |
| Stage 2              | 802    | -      | -      | - | -    | - |

| Approach             | WB   | NB | SB |
|----------------------|------|----|----|
| HCM Control Delay, s | 13.7 | 0  | 0  |
| HCM LOS              | B    |    |    |

| Minor Lane/Major Mvmt | NBT | NBRWBLn1 | SBL   | SBT  |
|-----------------------|-----|----------|-------|------|
| Capacity (veh/h)      | -   | -        | 424   | 1042 |
| HCM Lane V/C Ratio    | -   | -        | 0.028 | -    |
| HCM Control Delay (s) | -   | -        | 13.7  | 0    |
| HCM Lane LOS          | -   | -        | B     | A    |
| HCM 95th %tile Q(veh) | -   | -        | 0.1   | 0    |



Proposed Bank, Reading  
3: Eastern Site Driveway & Washington Street

2023 Existing  
Weekday Morning Peak Hour

| Intersection             |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh         | 0.2  |      |      |      |      |      |
| Movement                 | EBT  | EBR  | WBL  | WBT  | NBL  | NBR  |
| Lane Configurations      |      |      |      |      |      |      |
| Traffic Vol, veh/h       | 208  | 2    | 4    | 237  | 2    | 2    |
| Future Vol, veh/h        | 208  | 2    | 4    | 237  | 2    | 2    |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Stop | Stop |
| RT Channelized           | -    | None | -    | None | -    | None |
| Storage Length           | -    | -    | -    | -    | 0    | -    |
| Veh in Median Storage, # | 0    | -    | -    | 0    | 0    | -    |
| Grade, %                 | 0    | -    | -    | 0    | 0    | -    |
| Peak Hour Factor         | 76   | 76   | 76   | 76   | 50   | 50   |
| Heavy Vehicles, %        | 3    | 0    | 0    | 2    | 0    | 0    |
| Mvmt Flow                | 274  | 3    | 5    | 312  | 4    | 4    |

| Major/Minor          | Major1 | Major2 | Minor1 | Minor2 | Minor3 |
|----------------------|--------|--------|--------|--------|--------|
| Conflicting Flow All | 0      | 0      | 277    | 0      | 598    |
| Stage 1              | -      | -      | -      | -      | 276    |
| Stage 2              | -      | -      | -      | -      | 322    |
| Critical Hdwy        | -      | -      | 4.1    | -      | 6.4    |
| Critical Hdwy Stg 1  | -      | -      | -      | -      | 5.4    |
| Critical Hdwy Stg 2  | -      | -      | -      | -      | 5.4    |
| Follow-up Hdwy       | -      | -      | 2.2    | -      | 3.5    |
| Pot Cap-1 Maneuver   | -      | -      | 1298   | -      | 468    |
| Stage 1              | -      | -      | -      | -      | 775    |
| Stage 2              | -      | -      | -      | -      | 739    |
| Platoon blocked, %   | -      | -      | -      | -      | -      |
| Mov Cap-1 Maneuver   | -      | -      | 1298   | -      | 466    |
| Mov Cap-2 Maneuver   | -      | -      | -      | -      | 466    |
| Stage 1              | -      | -      | -      | -      | 775    |
| Stage 2              | -      | -      | -      | -      | 735    |

| Approach             | EB | WB  | NB   |
|----------------------|----|-----|------|
| HCM Control Delay, s | 0  | 0.1 | 11.3 |
| HCM LOS              |    |     | B    |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBL   | WBT |
|-----------------------|-------|-----|-----|-------|-----|
| Capacity (veh/h)      | 580   | -   | -   | 1298  | -   |
| HCM Lane V/C Ratio    | 0.014 | -   | -   | 0.004 | -   |
| HCM Control Delay (s) | 11.3  | -   | -   | 7.8   | 0   |
| HCM Lane LOS          | B     | -   | -   | A     | A   |
| HCM 95th %tile Q(veh) | 0     | -   | -   | 0     | -   |

Proposed Bank, Reading  
1: Main Street (Route 28) & Washington Street

2023 Existing  
Weekday Afternoon Peak Hour



| Lane Group              | EBL   | EBT  | EBR  | WBL   | WBT   | WBR  | NBL    | NBT   | NBR  | SBL    | SBT   | SBR  |
|-------------------------|-------|------|------|-------|-------|------|--------|-------|------|--------|-------|------|
| Lane Configurations     |       |      |      |       |       |      |        |       |      |        |       |      |
| Traffic Volume (vph)    | 48    | 182  | 19   | 64    | 208   | 78   | 119    | 528   | 59   | 47     | 306   | 15   |
| Future Volume (vph)     | 48    | 182  | 19   | 64    | 208   | 78   | 119    | 528   | 59   | 47     | 306   | 15   |
| Ideal Flow (vphpl)      | 1900  | 1900 | 1900 | 1900  | 1900  | 1900 | 1900   | 1900  | 1900 | 1900   | 1900  | 1900 |
| Lane Width (ft)         | 11    | 11   | 11   | 11    | 11    | 11   | 11     | 11    | 11   | 11     | 11    | 11   |
| Storage Length (ft)     | 95    |      | 0    | 0     |       | 0    | 0      |       | 0    | 0      |       | 0    |
| Storage Lanes           | 1     |      | 0    | 0     |       | 0    | 0      |       | 0    | 0      |       | 0    |
| Taper Length (ft)       | 25    |      |      | 25    |       |      | 25     |       |      | 25     |       |      |
| Satd. Flow (prot)       | 1745  | 1791 | 0    | 0     | 1762  | 0    | 0      | 3406  | 0    | 0      | 3389  | 0    |
| Flt Permitted           | 0.332 |      |      |       | 0.883 |      |        | 0.785 |      |        | 0.616 |      |
| Satd. Flow (perm)       | 610   | 1791 | 0    | 0     | 1567  | 0    | 0      | 2696  | 0    | 0      | 2099  | 0    |
| Right Turn on Red       |       |      | No   |       |       | No   |        |       | No   |        |       | No   |
| Satd. Flow (RTOR)       |       |      |      |       |       |      |        |       |      |        |       |      |
| Link Speed (mph)        |       | 25   |      |       | 30    |      |        | 30    |      |        | 30    |      |
| Link Distance (ft)      |       | 226  |      |       | 149   |      |        | 151   |      |        | 242   |      |
| Travel Time (s)         |       | 6.2  |      |       | 3.4   |      |        | 3.4   |      |        | 5.5   |      |
| Confl. Peds. (#/hr)     |       |      | 9    | 9     |       |      |        |       | 12   | 12     |       |      |
| Peak Hour Factor        | 0.84  | 0.84 | 0.84 | 0.83  | 0.83  | 0.83 | 0.97   | 0.97  | 0.97 | 0.93   | 0.93  | 0.93 |
| Heavy Vehicles (%)      | 0%    | 1%   | 0%   | 0%    | 0%    | 1%   | 0%     | 0%    | 0%   | 7%     | 1%    | 0%   |
| Shared Lane Traffic (%) |       |      |      |       |       |      |        |       |      |        |       |      |
| Lane Group Flow (vph)   | 57    | 240  | 0    | 0     | 422   | 0    | 0      | 728   | 0    | 0      | 396   | 0    |
| Turn Type               | pm+pt | NA   |      | Perm  | NA    |      | custom | NA    |      | custom | NA    |      |
| Protected Phases        | 5     | 5 6  |      |       | 6     |      | 3      | 2 3   |      | 1      | 1 2   |      |
| Permitted Phases        | 5 6   |      |      | 6     |       |      | 2      |       |      | 2      |       |      |
| Detector Phase          | 5     | 5 6  |      | 6     | 6     |      | 3      | 2 3   |      | 1      | 1 2   |      |
| Switch Phase            |       |      |      |       |       |      |        |       |      |        |       |      |
| Minimum Initial (s)     | 6.0   |      |      | 10.0  | 10.0  |      | 6.0    |       |      | 6.0    |       |      |
| Minimum Split (s)       | 11.0  |      |      | 15.0  | 15.0  |      | 13.0   |       |      | 13.0   |       |      |
| Total Split (s)         | 20.0  |      |      | 50.0  | 50.0  |      | 25.0   |       |      | 15.0   |       |      |
| Total Split (%)         | 10.6% |      |      | 26.5% | 26.5% |      | 13.2%  |       |      | 7.9%   |       |      |
| Yellow Time (s)         | 4.0   |      |      | 4.0   | 4.0   |      | 4.0    |       |      | 4.0    |       |      |
| All-Red Time (s)        | 1.0   |      |      | 1.0   | 1.0   |      | 3.0    |       |      | 3.0    |       |      |
| Lost Time Adjust (s)    | 0.0   |      |      |       | 0.0   |      |        |       |      |        |       |      |
| Total Lost Time (s)     | 5.0   |      |      |       | 5.0   |      |        |       |      |        |       |      |
| Lead/Lag                | Lead  |      |      | Lag   | Lag   |      | Lead   |       |      | Lead   |       |      |
| Lead-Lag Optimize?      | Yes   |      |      | Yes   | Yes   |      | Yes    |       |      | Yes    |       |      |
| Recall Mode             | None  |      |      | None  | None  |      | None   |       |      | None   |       |      |
| Act Effct Green (s)     | 59.8  | 64.8 |      |       | 45.5  |      |        | 49.8  |      |        | 49.5  |      |
| Actuated g/C Ratio      | 0.39  | 0.42 |      |       | 0.30  |      |        | 0.33  |      |        | 0.32  |      |
| v/c Ratio               | 0.17  | 0.32 |      |       | 0.90  |      |        | 0.79  |      |        | 0.53  |      |
| Control Delay           | 31.9  | 33.5 |      |       | 75.9  |      |        | 49.1  |      |        | 41.0  |      |
| Queue Delay             | 0.0   | 0.0  |      |       | 0.0   |      |        | 0.0   |      |        | 0.0   |      |
| Total Delay             | 31.9  | 33.5 |      |       | 75.9  |      |        | 49.1  |      |        | 41.0  |      |
| LOS                     | C     | C    |      |       | E     |      |        | D     |      |        | D     |      |
| Approach Delay          |       | 33.2 |      |       | 75.9  |      |        | 49.1  |      |        | 41.0  |      |
| Approach LOS            |       | C    |      |       | E     |      |        | D     |      |        | D     |      |
| Queue Length 50th (ft)  | 32    | 150  |      |       | 393   |      |        | 291   |      |        | 140   |      |
| Queue Length 95th (ft)  | 79    | 281  |      |       | #711  |      |        | 434   |      |        | 236   |      |
| Internal Link Dist (ft) |       | 146  |      |       | 69    |      |        | 71    |      |        | 162   |      |

| Lane Group              | Ø2   | Ø4   |
|-------------------------|------|------|
| Lane Configurations     |      |      |
| Traffic Volume (vph)    |      |      |
| Future Volume (vph)     |      |      |
| Ideal Flow (vphpl)      |      |      |
| Lane Width (ft)         |      |      |
| Storage Length (ft)     |      |      |
| Storage Lanes           |      |      |
| Taper Length (ft)       |      |      |
| Satd. Flow (prot)       |      |      |
| Flt Permitted           |      |      |
| Satd. Flow (perm)       |      |      |
| Right Turn on Red       |      |      |
| Satd. Flow (RTOR)       |      |      |
| Link Speed (mph)        |      |      |
| Link Distance (ft)      |      |      |
| Travel Time (s)         |      |      |
| Confl. Peds. (#/hr)     |      |      |
| Peak Hour Factor        |      |      |
| Heavy Vehicles (%)      |      |      |
| Shared Lane Traffic (%) |      |      |
| Lane Group Flow (vph)   |      |      |
| Turn Type               |      |      |
| Protected Phases        | 2    | 4    |
| Permitted Phases        |      |      |
| Detector Phase          |      |      |
| Switch Phase            |      |      |
| Minimum Initial (s)     | 10.0 | 6.0  |
| Minimum Split (s)       | 17.0 | 22.0 |
| Total Split (s)         | 57.0 | 22.0 |
| Total Split (%)         | 30%  | 12%  |
| Yellow Time (s)         | 4.0  | 3.0  |
| All-Red Time (s)        | 3.0  | 1.0  |
| Lost Time Adjust (s)    |      |      |
| Total Lost Time (s)     |      |      |
| Lead/Lag                | Lag  | Lag  |
| Lead-Lag Optimize?      | Yes  | Yes  |
| Recall Mode             | Min  | None |
| Act Effct Green (s)     |      |      |
| Actuated g/C Ratio      |      |      |
| v/c Ratio               |      |      |
| Control Delay           |      |      |
| Queue Delay             |      |      |
| Total Delay             |      |      |
| LOS                     |      |      |
| Approach Delay          |      |      |
| Approach LOS            |      |      |
| Queue Length 50th (ft)  |      |      |
| Queue Length 95th (ft)  |      |      |
| Internal Link Dist (ft) |      |      |

Proposed Bank, Reading  
 1: Main Street (Route 28) & Washington Street

2023 Existing  
 Weekday Afternoon Peak Hour



| Lane Group             | EBL  | EBT  | EBR | WBL | WBT  | WBR | NBL | NBT  | NBR | SBL | SBT | SBR  |
|------------------------|------|------|-----|-----|------|-----|-----|------|-----|-----|-----|------|
| Turn Bay Length (ft)   | 95   |      |     |     |      |     |     |      |     |     |     |      |
| Base Capacity (vph)    | 355  | 745  |     |     | 467  |     |     | 1229 |     |     |     | 875  |
| Starvation Cap Reductn | 0    | 0    |     |     | 0    |     |     | 0    |     |     |     | 0    |
| Spillback Cap Reductn  | 0    | 0    |     |     | 0    |     |     | 0    |     |     |     | 0    |
| Storage Cap Reductn    | 0    | 0    |     |     | 0    |     |     | 0    |     |     |     | 0    |
| Reduced v/c Ratio      | 0.16 | 0.32 |     |     | 0.90 |     |     | 0.59 |     |     |     | 0.45 |

Intersection Summary

|   |                        |
|---|------------------------|
| Area Type:  | Other                  |
| Cycle Length:   | 189                    |
| Actuated Cycle Length:  | 152.7                  |
| Natural Cycle:  | 125                    |
| Control Type:   | Actuated-Uncoordinated |
| Maximum v/c Ratio:  | 0.90                   |
| Intersection Signal Delay:  | 50.9                   |
| Intersection LOS:   | D                      |
| Intersection Capacity Utilization:  | 80.4%                  |
| ICU Level of Service:   | D                      |
| Analysis Period (min):  | 15                     |
| # 95th percentile volume exceeds capacity, queue may be longer.<br>Queue shown is maximum after two cycles. |                        |

Splits and Phases: 1: Main Street (Route 28) & Washington Street

| Phase    | Ø1   | Ø2   | Ø3   | Ø4   | Ø5   | Ø6   |
|----------|------|------|------|------|------|------|
| Duration | 15 s | 57 s | 25 s | 22 s | 20 s | 50 s |



---

| Lane Group             | Ø2 | Ø4 |
|------------------------|----|----|
| Turn Bay Length (ft)   |    |    |
| Base Capacity (vph)    |    |    |
| Starvation Cap Reductn |    |    |
| Spillback Cap Reductn  |    |    |
| Storage Cap Reductn    |    |    |
| Reduced v/c Ratio      |    |    |
| Intersection Summary   |    |    |

---

Proposed Bank, Reading  
 2: Main Street (Route 28) & Southern Site Driveway

2023 Existing  
 Weekday Afternoon Peak Hour

| Intersection             |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh         | 0.1  |      |      |      |      |      |
| Movement                 | WBL  | WBR  | NBT  | NBR  | SBL  | SBT  |
| Lane Configurations      | T    |      | T    |      | T    |      |
| Traffic Vol, veh/h       | 2    | 2    | 704  | 4    | 0    | 389  |
| Future Vol, veh/h        | 2    | 2    | 704  | 4    | 0    | 389  |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Stop | Stop | Free | Free | Free | Free |
| RT Channelized           | -    | None | -    | None | -    | None |
| Storage Length           | 0    | -    | -    | -    | -    | -    |
| Veh in Median Storage, # | 0    | -    | 0    | -    | -    | 0    |
| Grade, %                 | 0    | -    | 0    | -    | -    | 0    |
| Peak Hour Factor         | 50   | 50   | 97   | 97   | 97   | 97   |
| Heavy Vehicles, %        | 0    | 0    | 0    | 0    | 0    | 1    |
| Mvmt Flow                | 4    | 4    | 726  | 4    | 0    | 401  |

| Major/Minor          | Minor1 | Major1 | Major2 |   |     |
|----------------------|--------|--------|--------|---|-----|
| Conflicting Flow All | 929    | 365    | 0      | 0 | 730 |
| Stage 1              | 728    | -      | -      | - | -   |
| Stage 2              | 201    | -      | -      | - | -   |
| Critical Hdwy        | 6.8    | 6.9    | -      | - | 4.1 |
| Critical Hdwy Stg 1  | 5.8    | -      | -      | - | -   |
| Critical Hdwy Stg 2  | 5.8    | -      | -      | - | -   |
| Follow-up Hdwy       | 3.5    | 3.3    | -      | - | 2.2 |
| Pot Cap-1 Maneuver   | 270    | 638    | -      | - | 883 |
| Stage 1              | 444    | -      | -      | - | -   |
| Stage 2              | 819    | -      | -      | - | -   |
| Platoon blocked, %   |        |        | -      | - | -   |
| Mov Cap-1 Maneuver   | 270    | 638    | -      | - | 883 |
| Mov Cap-2 Maneuver   | 270    | -      | -      | - | -   |
| Stage 1              | 444    | -      | -      | - | -   |
| Stage 2              | 819    | -      | -      | - | -   |

| Approach             | WB   | NB | SB |
|----------------------|------|----|----|
| HCM Control Delay, s | 14.7 | 0  | 0  |
| HCM LOS              | B    |    |    |

| Minor Lane/Major Mvmt | NBT | NBRWBLn1 | SBL   | SBT |
|-----------------------|-----|----------|-------|-----|
| Capacity (veh/h)      | -   | -        | 379   | 883 |
| HCM Lane V/C Ratio    | -   | -        | 0.021 | -   |
| HCM Control Delay (s) | -   | -        | 14.7  | 0   |
| HCM Lane LOS          | -   | -        | B     | A   |
| HCM 95th %tile Q(veh) | -   | -        | 0.1   | 0   |

Proposed Bank, Reading  
3: Eastern Site Driveway & Washington Street

2023 Existing  
Weekday Afternoon Peak Hour

| Intersection             |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh         | 0.2  |      |      |      |      |      |
| Movement                 | EBT  | EBR  | WBL  | WBT  | NBL  | NBR  |
| Lane Configurations      |      |      |      |      |      |      |
| Traffic Vol, veh/h       | 282  | 6    | 6    | 350  | 0    | 6    |
| Future Vol, veh/h        | 282  | 6    | 6    | 350  | 0    | 6    |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Stop | Stop |
| RT Channelized           | -    | None | -    | None | -    | None |
| Storage Length           | -    | -    | -    | -    | 0    | -    |
| Veh in Median Storage, # | 0    | -    | -    | 0    | 0    | -    |
| Grade, %                 | 0    | -    | -    | 0    | 0    | -    |
| Peak Hour Factor         | 93   | 93   | 83   | 83   | 75   | 75   |
| Heavy Vehicles, %        | 2    | 0    | 0    | 1    | 0    | 0    |
| Mvmt Flow                | 303  | 6    | 7    | 422  | 0    | 8    |

| Major/Minor          | Major1 | Major2 | Minor1 | Minor2 | Minor3 |
|----------------------|--------|--------|--------|--------|--------|
| Conflicting Flow All | 0      | 0      | 309    | 0      | 742    |
| Stage 1              | -      | -      | -      | -      | 306    |
| Stage 2              | -      | -      | -      | -      | 436    |
| Critical Hdwy        | -      | -      | 4.1    | -      | 6.4    |
| Critical Hdwy Stg 1  | -      | -      | -      | -      | 5.4    |
| Critical Hdwy Stg 2  | -      | -      | -      | -      | 5.4    |
| Follow-up Hdwy       | -      | -      | 2.2    | -      | 3.5    |
| Pot Cap-1 Maneuver   | -      | -      | 1263   | -      | 386    |
| Stage 1              | -      | -      | -      | -      | 751    |
| Stage 2              | -      | -      | -      | -      | 656    |
| Platoon blocked, %   | -      | -      | -      | -      | -      |
| Mov Cap-1 Maneuver   | -      | -      | 1263   | -      | 383    |
| Mov Cap-2 Maneuver   | -      | -      | -      | -      | 383    |
| Stage 1              | -      | -      | -      | -      | 751    |
| Stage 2              | -      | -      | -      | -      | 651    |

| Approach             | EB | WB  | NB  |
|----------------------|----|-----|-----|
| HCM Control Delay, s | 0  | 0.1 | 9.9 |
| HCM LOS              |    |     | A   |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBL   | WBT |
|-----------------------|-------|-----|-----|-------|-----|
| Capacity (veh/h)      | 739   | -   | -   | 1263  | -   |
| HCM Lane V/C Ratio    | 0.011 | -   | -   | 0.006 | -   |
| HCM Control Delay (s) | 9.9   | -   | -   | 7.9   | 0   |
| HCM Lane LOS          | A     | -   | -   | A     | A   |
| HCM 95th %tile Q(veh) | 0     | -   | -   | 0     | -   |

## **APPENDIX G**

### **2030 No Build Capacity/Level-of-Service Analysis**



Lanes, Volumes, Timings  
 1: Main Street (Route 28) & Washington Street

01/24/2023

| Lane Group              | EBL   | EBT   | EBR  | WBL   | WBT   | WBR  | NBL    | NBT   | NBR  | SBL    | SBT   | SBR  |
|-------------------------|-------|-------|------|-------|-------|------|--------|-------|------|--------|-------|------|
| Lane Configurations     |       |       |      |       |       |      |        |       |      |        |       |      |
| Traffic Volume (vph)    | 48    | 118   | 18   | 61    | 138   | 53   | 58     | 384   | 57   | 41     | 362   | 19   |
| Future Volume (vph)     | 48    | 118   | 18   | 61    | 138   | 53   | 58     | 384   | 57   | 41     | 362   | 19   |
| Ideal Flow (vphpl)      | 1900  | 1900  | 1900 | 1900  | 1900  | 1900 | 1900   | 1900  | 1900 | 1900   | 1900  | 1900 |
| Lane Width (ft)         | 11    | 11    | 11   | 11    | 11    | 11   | 11     | 11    | 11   | 11     | 11    | 11   |
| Storage Length (ft)     | 95    |       | 0    | 0     |       | 0    | 0      |       | 0    | 0      |       | 0    |
| Storage Lanes           | 1     |       | 0    | 0     |       | 0    | 0      |       | 0    | 0      |       | 0    |
| Taper Length (ft)       | 25    |       |      | 25    |       |      | 25     |       |      | 25     |       |      |
| Lane Util. Factor       | 1.00  | 1.00  | 1.00 | 1.00  | 1.00  | 1.00 | 0.95   | 0.95  | 0.95 | 0.95   | 0.95  | 0.95 |
| Ped Bike Factor         |       | 1.00  |      |       | 1.00  |      |        | 1.00  |      |        | 1.00  |      |
| Frt                     |       | 0.980 |      |       | 0.971 |      |        | 0.983 |      |        | 0.993 |      |
| Flt Protected           | 0.950 |       |      |       | 0.988 |      |        | 0.994 |      |        | 0.995 |      |
| Satd. Flow (prot)       | 1711  | 1781  | 0    | 0     | 1736  | 0    | 0      | 3356  | 0    | 0      | 3336  | 0    |
| Flt Permitted           | 0.403 |       |      |       | 0.879 |      |        | 0.819 |      |        | 0.784 |      |
| Satd. Flow (perm)       | 726   | 1781  | 0    | 0     | 1543  | 0    | 0      | 2765  | 0    | 0      | 2627  | 0    |
| Right Turn on Red       |       |       | No   |       |       | No   |        |       | No   |        |       | No   |
| Satd. Flow (RTOR)       |       |       |      |       |       |      |        |       |      |        |       |      |
| Link Speed (mph)        |       | 25    |      |       | 30    |      |        | 30    |      |        | 30    |      |
| Link Distance (ft)      |       | 226   |      |       | 149   |      |        | 151   |      |        | 242   |      |
| Travel Time (s)         |       | 6.2   |      |       | 3.4   |      |        | 3.4   |      |        | 5.5   |      |
| Confl. Peds. (#/hr)     |       |       | 2    | 2     |       |      |        |       | 7    | 7      |       |      |
| Peak Hour Factor        | 0.92  | 0.92  | 0.92 | 0.92  | 0.92  | 0.92 | 0.92   | 0.92  | 0.92 | 0.92   | 0.92  | 0.92 |
| Heavy Vehicles (%)      | 2%    | 1%    | 0%   | 0%    | 2%    | 2%   | 2%     | 1%    | 2%   | 8%     | 3%    | 0%   |
| Shared Lane Traffic (%) |       |       |      |       |       |      |        |       |      |        |       |      |
| Lane Group Flow (vph)   | 52    | 148   | 0    | 0     | 274   | 0    | 0      | 542   | 0    | 0      | 459   | 0    |
| Turn Type               | pm+pt | NA    |      | Perm  | NA    |      | custom | NA    |      | custom | NA    |      |
| Protected Phases        | 5     | 5 6   |      |       | 6     |      | 3      | 2 3   |      | 1      | 1 2   |      |
| Permitted Phases        | 5 6   |       |      | 6     |       |      | 2      |       |      | 2      |       |      |
| Detector Phase          | 5     | 5 6   |      | 6     | 6     |      | 3      | 2 3   |      | 1      | 1 2   |      |
| Switch Phase            |       |       |      |       |       |      |        |       |      |        |       |      |
| Minimum Initial (s)     | 6.0   |       |      | 10.0  | 10.0  |      | 6.0    |       |      | 6.0    |       |      |
| Minimum Split (s)       | 11.0  |       |      | 15.0  | 15.0  |      | 13.0   |       |      | 13.0   |       |      |
| Total Split (s)         | 18.0  |       |      | 45.0  | 45.0  |      | 17.0   |       |      | 17.0   |       |      |
| Total Split (%)         | 10.8% |       |      | 27.1% | 27.1% |      | 10.2%  |       |      | 10.2%  |       |      |
| Yellow Time (s)         | 4.0   |       |      | 4.0   | 4.0   |      | 4.0    |       |      | 4.0    |       |      |
| All-Red Time (s)        | 1.0   |       |      | 1.0   | 1.0   |      | 3.0    |       |      | 3.0    |       |      |
| Lost Time Adjust (s)    | 0.0   |       |      |       | 0.0   |      |        |       |      |        |       |      |
| Total Lost Time (s)     | 5.0   |       |      |       | 5.0   |      |        |       |      |        |       |      |
| Lead/Lag                | Lead  |       |      | Lag   | Lag   |      | Lead   |       |      | Lead   |       |      |
| Lead-Lag Optimize?      | Yes   |       |      | Yes   | Yes   |      | Yes    |       |      | Yes    |       |      |
| Recall Mode             | None  |       |      | None  | None  |      | None   |       |      | None   |       |      |
| Act Effct Green (s)     | 36.1  | 41.3  |      |       | 25.6  |      |        | 33.4  |      |        | 37.2  |      |
| Actuated g/C Ratio      | 0.31  | 0.36  |      |       | 0.22  |      |        | 0.29  |      |        | 0.32  |      |
| v/c Ratio               | 0.16  | 0.23  |      |       | 0.80  |      |        | 0.65  |      |        | 0.50  |      |
| Control Delay           | 28.9  | 29.1  |      |       | 63.3  |      |        | 36.6  |      |        | 31.3  |      |
| Queue Delay             | 0.0   | 0.0   |      |       | 0.0   |      |        | 0.0   |      |        | 0.0   |      |
| Total Delay             | 28.9  | 29.1  |      |       | 63.3  |      |        | 36.6  |      |        | 31.3  |      |
| LOS                     | C     | C     |      |       | E     |      |        | D     |      |        | C     |      |
| Approach Delay          |       | 29.0  |      |       | 63.3  |      |        | 36.6  |      |        | 31.3  |      |

Lanes, Volumes, Timings  
 1: Main Street (Route 28) & Washington Street

01/24/2023

| Lane Group              | Ø2   | Ø4   |
|-------------------------|------|------|
| Lane Configurations     |      |      |
| Traffic Volume (vph)    |      |      |
| Future Volume (vph)     |      |      |
| Ideal Flow (vphpl)      |      |      |
| Lane Width (ft)         |      |      |
| Storage Length (ft)     |      |      |
| Storage Lanes           |      |      |
| Taper Length (ft)       |      |      |
| Lane Util. Factor       |      |      |
| Ped Bike Factor         |      |      |
| Frt                     |      |      |
| Flt Protected           |      |      |
| Satd. Flow (prot)       |      |      |
| Flt Permitted           |      |      |
| Satd. Flow (perm)       |      |      |
| Right Turn on Red       |      |      |
| Satd. Flow (RTOR)       |      |      |
| Link Speed (mph)        |      |      |
| Link Distance (ft)      |      |      |
| Travel Time (s)         |      |      |
| Confl. Peds. (#/hr)     |      |      |
| Peak Hour Factor        |      |      |
| Heavy Vehicles (%)      |      |      |
| Shared Lane Traffic (%) |      |      |
| Lane Group Flow (vph)   |      |      |
| Turn Type               |      |      |
| Protected Phases        | 2    | 4    |
| Permitted Phases        |      |      |
| Detector Phase          |      |      |
| Switch Phase            |      |      |
| Minimum Initial (s)     | 8.0  | 6.0  |
| Minimum Split (s)       | 17.0 | 22.0 |
| Total Split (s)         | 47.0 | 22.0 |
| Total Split (%)         | 28%  | 13%  |
| Yellow Time (s)         | 4.0  | 3.0  |
| All-Red Time (s)        | 3.0  | 1.0  |
| Lost Time Adjust (s)    |      |      |
| Total Lost Time (s)     |      |      |
| Lead/Lag                | Lag  | Lag  |
| Lead-Lag Optimize?      | Yes  | Yes  |
| Recall Mode             | Min  | None |
| Act Effct Green (s)     |      |      |
| Actuated g/C Ratio      |      |      |
| v/c Ratio               |      |      |
| Control Delay           |      |      |
| Queue Delay             |      |      |
| Total Delay             |      |      |
| LOS                     |      |      |
| Approach Delay          |      |      |

Lanes, Volumes, Timings  
 1: Main Street (Route 28) & Washington Street

01/24/2023

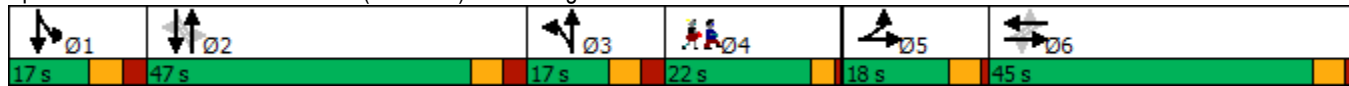


| Lane Group              | EBL  | EBT  | EBR | WBL | WBT  | WBR | NBL | NBT  | NBR | SBL | SBT  | SBR |
|-------------------------|------|------|-----|-----|------|-----|-----|------|-----|-----|------|-----|
| Approach LOS            |      | C    |     |     | E    |     |     | D    |     |     | C    |     |
| Queue Length 50th (ft)  | 23   | 70   |     |     | 181  |     |     | 151  |     |     | 116  |     |
| Queue Length 95th (ft)  | 71   | 171  |     |     | 385  |     |     | 303  |     |     | 247  |     |
| Internal Link Dist (ft) |      | 146  |     |     | 69   |     |     | 71   |     |     | 162  |     |
| Turn Bay Length (ft)    | 95   |      |     |     |      |     |     |      |     |     |      |     |
| Base Capacity (vph)     | 360  | 863  |     |     | 560  |     |     | 1146 |     |     | 1256 |     |
| Starvation Cap Reductn  | 0    | 0    |     |     | 0    |     |     | 0    |     |     | 0    |     |
| Spillback Cap Reductn   | 0    | 0    |     |     | 0    |     |     | 0    |     |     | 0    |     |
| Storage Cap Reductn     | 0    | 0    |     |     | 0    |     |     | 0    |     |     | 0    |     |
| Reduced v/c Ratio       | 0.14 | 0.17 |     |     | 0.49 |     |     | 0.47 |     |     | 0.37 |     |

Intersection Summary

|                                    |                        |
|------------------------------------|------------------------|
| Area Type:                         | Other                  |
| Cycle Length:                      | 166                    |
| Actuated Cycle Length:             | 115.6                  |
| Natural Cycle:                     | 95                     |
| Control Type:                      | Actuated-Uncoordinated |
| Maximum v/c Ratio:                 | 0.80                   |
| Intersection Signal Delay:         | 38.9                   |
| Intersection LOS:                  | D                      |
| Intersection Capacity Utilization: | 67.2%                  |
| ICU Level of Service:              | C                      |
| Analysis Period (min):             | 15                     |

Splits and Phases: 1: Main Street (Route 28) & Washington Street



---

| Lane Group              | Ø2 | Ø4 |
|-------------------------|----|----|
| Approach LOS            |    |    |
| Queue Length 50th (ft)  |    |    |
| Queue Length 95th (ft)  |    |    |
| Internal Link Dist (ft) |    |    |
| Turn Bay Length (ft)    |    |    |
| Base Capacity (vph)     |    |    |
| Starvation Cap Reductn  |    |    |
| Spillback Cap Reductn   |    |    |
| Storage Cap Reductn     |    |    |
| Reduced v/c Ratio       |    |    |
| Intersection Summary    |    |    |

---





Lanes, Volumes, Timings  
1: Main Street (Route 28) & Washington Street

01/24/2023

| Lane Group              | EBL   | EBT   | EBR  | WBL   | WBT   | WBR  | NBL    | NBT   | NBR  | SBL    | SBT   | SBR  |
|-------------------------|-------|-------|------|-------|-------|------|--------|-------|------|--------|-------|------|
| Lane Configurations     |       |       |      |       |       |      |        |       |      |        |       |      |
| Traffic Volume (vph)    | 50    | 189   | 20   | 67    | 215   | 83   | 125    | 556   | 61   | 49     | 323   | 16   |
| Future Volume (vph)     | 50    | 189   | 20   | 67    | 215   | 83   | 125    | 556   | 61   | 49     | 323   | 16   |
| Ideal Flow (vphpl)      | 1900  | 1900  | 1900 | 1900  | 1900  | 1900 | 1900   | 1900  | 1900 | 1900   | 1900  | 1900 |
| Lane Width (ft)         | 11    | 11    | 11   | 11    | 11    | 11   | 11     | 11    | 11   | 11     | 11    | 11   |
| Storage Length (ft)     | 95    |       | 0    | 0     |       | 0    | 0      |       | 0    | 0      |       | 0    |
| Storage Lanes           | 1     |       | 0    | 0     |       | 0    | 0      |       | 0    | 0      |       | 0    |
| Taper Length (ft)       | 25    |       |      | 25    |       |      | 25     |       |      | 25     |       |      |
| Lane Util. Factor       | 1.00  | 1.00  | 1.00 | 1.00  | 1.00  | 1.00 | 0.95   | 0.95  | 0.95 | 0.95   | 0.95  | 0.95 |
| Ped Bike Factor         |       | 1.00  |      |       | 1.00  |      |        | 1.00  |      |        | 1.00  |      |
| Frt                     |       | 0.985 |      |       | 0.969 |      |        | 0.988 |      |        | 0.994 |      |
| Flt Protected           | 0.950 |       |      |       | 0.991 |      |        | 0.992 |      |        | 0.994 |      |
| Satd. Flow (prot)       | 1745  | 1790  | 0    | 0     | 1760  | 0    | 0      | 3410  | 0    | 0      | 3390  | 0    |
| Flt Permitted           | 0.339 |       |      |       | 0.886 |      |        | 0.776 |      |        | 0.591 |      |
| Satd. Flow (perm)       | 623   | 1790  | 0    | 0     | 1571  | 0    | 0      | 2668  | 0    | 0      | 2014  | 0    |
| Right Turn on Red       |       |       | No   |       |       | No   |        |       | No   |        |       | No   |
| Satd. Flow (RTOR)       |       |       |      |       |       |      |        |       |      |        |       |      |
| Link Speed (mph)        |       | 25    |      |       | 30    |      |        | 30    |      |        | 30    |      |
| Link Distance (ft)      |       | 226   |      |       | 149   |      |        | 151   |      |        | 242   |      |
| Travel Time (s)         |       | 6.2   |      |       | 3.4   |      |        | 3.4   |      |        | 5.5   |      |
| Confl. Peds. (#/hr)     |       |       | 9    | 9     |       |      |        |       | 12   | 12     |       |      |
| Peak Hour Factor        | 0.92  | 0.92  | 0.92 | 0.92  | 0.92  | 0.92 | 0.92   | 0.92  | 0.92 | 0.92   | 0.92  | 0.92 |
| Heavy Vehicles (%)      | 0%    | 1%    | 0%   | 0%    | 0%    | 1%   | 0%     | 0%    | 0%   | 7%     | 1%    | 0%   |
| Shared Lane Traffic (%) |       |       |      |       |       |      |        |       |      |        |       |      |
| Lane Group Flow (vph)   | 54    | 227   | 0    | 0     | 397   | 0    | 0      | 806   | 0    | 0      | 421   | 0    |
| Turn Type               | pm+pt | NA    |      | Perm  | NA    |      | custom | NA    |      | custom | NA    |      |
| Protected Phases        | 5     | 5 6   |      |       | 6     |      | 3      | 2 3   |      | 1      | 1 2   |      |
| Permitted Phases        | 5 6   |       |      | 6     |       |      | 2      |       |      | 2      |       |      |
| Detector Phase          | 5     | 5 6   |      | 6     | 6     |      | 3      | 2 3   |      | 1      | 1 2   |      |
| Switch Phase            |       |       |      |       |       |      |        |       |      |        |       |      |
| Minimum Initial (s)     | 6.0   |       |      | 10.0  | 10.0  |      | 6.0    |       |      | 6.0    |       |      |
| Minimum Split (s)       | 11.0  |       |      | 15.0  | 15.0  |      | 13.0   |       |      | 13.0   |       |      |
| Total Split (s)         | 20.0  |       |      | 50.0  | 50.0  |      | 25.0   |       |      | 15.0   |       |      |
| Total Split (%)         | 10.6% |       |      | 26.5% | 26.5% |      | 13.2%  |       |      | 7.9%   |       |      |
| Yellow Time (s)         | 4.0   |       |      | 4.0   | 4.0   |      | 4.0    |       |      | 4.0    |       |      |
| All-Red Time (s)        | 1.0   |       |      | 1.0   | 1.0   |      | 3.0    |       |      | 3.0    |       |      |
| Lost Time Adjust (s)    | 0.0   |       |      |       | 0.0   |      |        |       |      |        |       |      |
| Total Lost Time (s)     | 5.0   |       |      |       | 5.0   |      |        |       |      |        |       |      |
| Lead/Lag                | Lead  |       |      | Lag   | Lag   |      | Lead   |       |      | Lead   |       |      |
| Lead-Lag Optimize?      | Yes   |       |      | Yes   | Yes   |      | Yes    |       |      | Yes    |       |      |
| Recall Mode             | None  |       |      | None  | None  |      | None   |       |      | None   |       |      |
| Act Effct Green (s)     | 59.7  | 64.7  |      |       | 45.5  |      |        | 55.0  |      |        | 53.4  |      |
| Actuated g/C Ratio      | 0.38  | 0.41  |      |       | 0.29  |      |        | 0.35  |      |        | 0.34  |      |
| v/c Ratio               | 0.16  | 0.31  |      |       | 0.88  |      |        | 0.83  |      |        | 0.56  |      |
| Control Delay           | 33.9  | 35.6  |      |       | 75.1  |      |        | 50.8  |      |        | 42.3  |      |
| Queue Delay             | 0.0   | 0.0   |      |       | 0.0   |      |        | 0.0   |      |        | 0.0   |      |
| Total Delay             | 33.9  | 35.6  |      |       | 75.1  |      |        | 50.8  |      |        | 42.3  |      |
| LOS                     | C     | D     |      |       | E     |      |        | D     |      |        | D     |      |
| Approach Delay          |       | 35.3  |      |       | 75.1  |      |        | 50.8  |      |        | 42.3  |      |

Lanes, Volumes, Timings  
 1: Main Street (Route 28) & Washington Street

01/24/2023

| Lane Group              | Ø2   | Ø4   |
|-------------------------|------|------|
| Lane Configurations     |      |      |
| Traffic Volume (vph)    |      |      |
| Future Volume (vph)     |      |      |
| Ideal Flow (vphpl)      |      |      |
| Lane Width (ft)         |      |      |
| Storage Length (ft)     |      |      |
| Storage Lanes           |      |      |
| Taper Length (ft)       |      |      |
| Lane Util. Factor       |      |      |
| Ped Bike Factor         |      |      |
| Frt                     |      |      |
| Flt Protected           |      |      |
| Satd. Flow (prot)       |      |      |
| Flt Permitted           |      |      |
| Satd. Flow (perm)       |      |      |
| Right Turn on Red       |      |      |
| Satd. Flow (RTOR)       |      |      |
| Link Speed (mph)        |      |      |
| Link Distance (ft)      |      |      |
| Travel Time (s)         |      |      |
| Confl. Peds. (#/hr)     |      |      |
| Peak Hour Factor        |      |      |
| Heavy Vehicles (%)      |      |      |
| Shared Lane Traffic (%) |      |      |
| Lane Group Flow (vph)   |      |      |
| Turn Type               |      |      |
| Protected Phases        | 2    | 4    |
| Permitted Phases        |      |      |
| Detector Phase          |      |      |
| Switch Phase            |      |      |
| Minimum Initial (s)     | 10.0 | 6.0  |
| Minimum Split (s)       | 17.0 | 22.0 |
| Total Split (s)         | 57.0 | 22.0 |
| Total Split (%)         | 30%  | 12%  |
| Yellow Time (s)         | 4.0  | 3.0  |
| All-Red Time (s)        | 3.0  | 1.0  |
| Lost Time Adjust (s)    |      |      |
| Total Lost Time (s)     |      |      |
| Lead/Lag                | Lag  | Lag  |
| Lead-Lag Optimize?      | Yes  | Yes  |
| Recall Mode             | Min  | None |
| Act Effct Green (s)     |      |      |
| Actuated g/C Ratio      |      |      |
| v/c Ratio               |      |      |
| Control Delay           |      |      |
| Queue Delay             |      |      |
| Total Delay             |      |      |
| LOS                     |      |      |
| Approach Delay          |      |      |

Lanes, Volumes, Timings

1: Main Street (Route 28) & Washington Street

01/24/2023

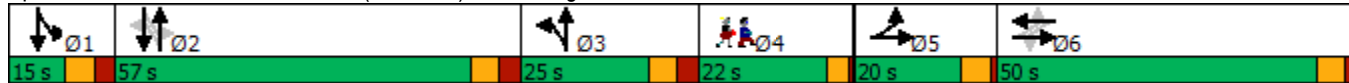


| Lane Group              | EBL  | EBT  | EBR | WBL | WBT  | WBR | NBL | NBT  | NBR | SBL | SBT  | SBR |
|-------------------------|------|------|-----|-----|------|-----|-----|------|-----|-----|------|-----|
| Approach LOS            |      | D    |     |     | E    |     |     | D    |     |     | D    |     |
| Queue Length 50th (ft)  | 33   | 153  |     |     | 388  |     |     | 332  |     |     | 152  |     |
| Queue Length 95th (ft)  | 83   | 298  |     |     | #768 |     |     | 489  |     |     | 259  |     |
| Internal Link Dist (ft) |      | 146  |     |     | 69   |     |     | 71   |     |     | 162  |     |
| Turn Bay Length (ft)    | 95   |      |     |     |      |     |     |      |     |     |      |     |
| Base Capacity (vph)     | 347  | 720  |     |     | 453  |     |     | 1216 |     |     | 819  |     |
| Starvation Cap Reductn  | 0    | 0    |     |     | 0    |     |     | 0    |     |     | 0    |     |
| Spillback Cap Reductn   | 0    | 0    |     |     | 0    |     |     | 0    |     |     | 0    |     |
| Storage Cap Reductn     | 0    | 0    |     |     | 0    |     |     | 0    |     |     | 0    |     |
| Reduced v/c Ratio       | 0.16 | 0.32 |     |     | 0.88 |     |     | 0.66 |     |     | 0.51 |     |

Intersection Summary

|   |                        |
|---|------------------------|
| Area Type:  | Other                  |
| Cycle Length:   | 189                    |
| Actuated Cycle Length:  | 157.8                  |
| Natural Cycle:  | 135                    |
| Control Type:   | Actuated-Uncoordinated |
| Maximum v/c Ratio:  | 0.88                   |
| Intersection Signal Delay:  | 51.7                   |
| Intersection LOS:   | D                      |
| Intersection Capacity Utilization:  | 83.2%                  |
| ICU Level of Service:   | E                      |
| Analysis Period (min):  | 15                     |
| # 95th percentile volume exceeds capacity, queue may be longer.<br>Queue shown is maximum after two cycles. |                        |

Splits and Phases: 1: Main Street (Route 28) & Washington Street





---

| Lane Group              | Ø2 | Ø4 |
|-------------------------|----|----|
| Approach LOS            |    |    |
| Queue Length 50th (ft)  |    |    |
| Queue Length 95th (ft)  |    |    |
| Internal Link Dist (ft) |    |    |
| Turn Bay Length (ft)    |    |    |
| Base Capacity (vph)     |    |    |
| Starvation Cap Reductn  |    |    |
| Spillback Cap Reductn   |    |    |
| Storage Cap Reductn     |    |    |
| Reduced v/c Ratio       |    |    |
| Intersection Summary    |    |    |

---

HCM 6th TWSC  
 2: Main Street (Route 28) & Southern Site Driveway

01/24/2023

| Intersection             |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh         | 0.1  |      |      |      |      |      |
| Movement                 | WBL  | WBR  | NBT  | NBR  | SBL  | SBT  |
| Lane Configurations      | T    |      | T    |      | T    |      |
| Traffic Vol, veh/h       | 2    | 2    | 740  | 4    | 0    | 410  |
| Future Vol, veh/h        | 2    | 2    | 740  | 4    | 0    | 410  |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Stop | Stop | Free | Free | Free | Free |
| RT Channelized           | -    | None | -    | None | -    | None |
| Storage Length           | 0    | -    | -    | -    | -    | -    |
| Veh in Median Storage, # | 0    | -    | 0    | -    | -    | 0    |
| Grade, %                 | 0    | -    | 0    | -    | -    | 0    |
| Peak Hour Factor         | 92   | 92   | 92   | 92   | 92   | 92   |
| Heavy Vehicles, %        | 0    | 0    | 0    | 0    | 0    | 1    |
| Mvmt Flow                | 2    | 2    | 804  | 4    | 0    | 446  |

| Major/Minor          | Minor1 | Major1 | Major2 |   |     |   |
|----------------------|--------|--------|--------|---|-----|---|
| Conflicting Flow All | 1029   | 404    | 0      | 0 | 808 | 0 |
| Stage 1              | 806    | -      | -      | - | -   | - |
| Stage 2              | 223    | -      | -      | - | -   | - |
| Critical Hdwy        | 6.8    | 6.9    | -      | - | 4.1 | - |
| Critical Hdwy Stg 1  | 5.8    | -      | -      | - | -   | - |
| Critical Hdwy Stg 2  | 5.8    | -      | -      | - | -   | - |
| Follow-up Hdwy       | 3.5    | 3.3    | -      | - | 2.2 | - |
| Pot Cap-1 Maneuver   | 233    | 602    | -      | - | 826 | - |
| Stage 1              | 405    | -      | -      | - | -   | - |
| Stage 2              | 799    | -      | -      | - | -   | - |
| Platoon blocked, %   |        |        | -      | - |     | - |
| Mov Cap-1 Maneuver   | 233    | 602    | -      | - | 826 | - |
| Mov Cap-2 Maneuver   | 233    | -      | -      | - | -   | - |
| Stage 1              | 405    | -      | -      | - | -   | - |
| Stage 2              | 799    | -      | -      | - | -   | - |

| Approach             | WB   | NB | SB |
|----------------------|------|----|----|
| HCM Control Delay, s | 15.9 | 0  | 0  |
| HCM LOS              | C    |    |    |

| Minor Lane/Major Mvmt | NBT | NBRWBLn1 | SBL   | SBT |
|-----------------------|-----|----------|-------|-----|
| Capacity (veh/h)      | -   | -        | 336   | 826 |
| HCM Lane V/C Ratio    | -   | -        | 0.013 | -   |
| HCM Control Delay (s) | -   | -        | 15.9  | 0   |
| HCM Lane LOS          | -   | -        | C     | A   |
| HCM 95th %tile Q(veh) | -   | -        | 0     | 0   |

HCM 6th TWSC  
 3: Eastern Site Driveway & Washington Street

01/24/2023

| Intersection             |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh         | 0.1  |      |      |      |      |      |
| Movement                 | EBT  | EBR  | WBL  | WBT  | NBL  | NBR  |
| Lane Configurations      |      |      |      |      |      |      |
| Traffic Vol, veh/h       | 293  | 6    | 6    | 365  | 0    | 6    |
| Future Vol, veh/h        | 293  | 6    | 6    | 365  | 0    | 6    |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Stop | Stop |
| RT Channelized           | -    | None | -    | None | -    | None |
| Storage Length           | -    | -    | -    | -    | 0    | -    |
| Veh in Median Storage, # | 0    | -    | -    | 0    | 0    | -    |
| Grade, %                 | 0    | -    | -    | 0    | 0    | -    |
| Peak Hour Factor         | 92   | 92   | 92   | 92   | 92   | 92   |
| Heavy Vehicles, %        | 2    | 0    | 0    | 1    | 0    | 0    |
| Mvmt Flow                | 318  | 7    | 7    | 397  | 0    | 7    |

| Major/Minor          | Major1 | Major2 | Minor1 |   |         |
|----------------------|--------|--------|--------|---|---------|
| Conflicting Flow All | 0      | 0      | 325    | 0 | 733 322 |
| Stage 1              | -      | -      | -      | - | 322 -   |
| Stage 2              | -      | -      | -      | - | 411 -   |
| Critical Hdwy        | -      | -      | 4.1    | - | 6.4 6.2 |
| Critical Hdwy Stg 1  | -      | -      | -      | - | 5.4 -   |
| Critical Hdwy Stg 2  | -      | -      | -      | - | 5.4 -   |
| Follow-up Hdwy       | -      | -      | 2.2    | - | 3.5 3.3 |
| Pot Cap-1 Maneuver   | -      | -      | 1246   | - | 391 724 |
| Stage 1              | -      | -      | -      | - | 739 -   |
| Stage 2              | -      | -      | -      | - | 674 -   |
| Platoon blocked, %   | -      | -      | -      | - | -       |
| Mov Cap-1 Maneuver   | -      | -      | 1246   | - | 388 724 |
| Mov Cap-2 Maneuver   | -      | -      | -      | - | 388 -   |
| Stage 1              | -      | -      | -      | - | 739 -   |
| Stage 2              | -      | -      | -      | - | 669 -   |

| Approach             | EB | WB  | NB |
|----------------------|----|-----|----|
| HCM Control Delay, s | 0  | 0.1 | 10 |
| HCM LOS              |    |     | B  |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBL   | WBT |
|-----------------------|-------|-----|-----|-------|-----|
| Capacity (veh/h)      | 724   | -   | -   | 1246  | -   |
| HCM Lane V/C Ratio    | 0.009 | -   | -   | 0.005 | -   |
| HCM Control Delay (s) | 10    | -   | -   | 7.9   | 0   |
| HCM Lane LOS          | B     | -   | -   | A     | A   |
| HCM 95th %tile Q(veh) | 0     | -   | -   | 0     | -   |

## **APPENDIX H**

### **2030 Build Capacity/Level-of-Service Analysis**



Proposed Bank, Reading  
1: Main Street (Route 28) & Washington Street

2030 Build  
Weekday Morning Peak Hour



| Lane Group              | EBL   | EBT   | EBR  | WBL   | WBT   | WBR  | NBL    | NBT   | NBR  | SBL    | SBT   | SBR  |
|-------------------------|-------|-------|------|-------|-------|------|--------|-------|------|--------|-------|------|
| Lane Configurations     |       |       |      |       |       |      |        |       |      |        |       |      |
| Traffic Volume (vph)    | 47    | 121   | 18   | 61    | 138   | 53   | 67     | 386   | 57   | 45     | 361   | 19   |
| Future Volume (vph)     | 47    | 121   | 18   | 61    | 138   | 53   | 67     | 386   | 57   | 45     | 361   | 19   |
| Ideal Flow (vphpl)      | 1900  | 1900  | 1900 | 1900  | 1900  | 1900 | 1900   | 1900  | 1900 | 1900   | 1900  | 1900 |
| Lane Width (ft)         | 11    | 11    | 11   | 11    | 11    | 11   | 11     | 11    | 11   | 11     | 11    | 11   |
| Storage Length (ft)     | 95    |       | 0    | 0     |       | 0    | 0      |       | 0    | 0      |       | 0    |
| Storage Lanes           | 1     |       | 0    | 0     |       | 0    | 0      |       | 0    | 0      |       | 0    |
| Taper Length (ft)       | 25    |       |      | 25    |       |      | 25     |       |      | 25     |       |      |
| Lane Util. Factor       | 1.00  | 1.00  | 1.00 | 1.00  | 1.00  | 1.00 | 0.95   | 0.95  | 0.95 | 0.95   | 0.95  | 0.95 |
| Ped Bike Factor         |       | 1.00  |      |       | 1.00  |      |        | 1.00  |      |        | 1.00  |      |
| Frt                     |       | 0.980 |      |       | 0.971 |      |        | 0.983 |      |        | 0.993 |      |
| Flt Protected           | 0.950 |       |      |       | 0.988 |      |        | 0.993 |      |        | 0.995 |      |
| Satd. Flow (prot)       | 1711  | 1781  | 0    | 0     | 1736  | 0    | 0      | 3353  | 0    | 0      | 3335  | 0    |
| Flt Permitted           | 0.401 |       |      |       | 0.878 |      |        | 0.800 |      |        | 0.756 |      |
| Satd. Flow (perm)       | 722   | 1781  | 0    | 0     | 1542  | 0    | 0      | 2701  | 0    | 0      | 2533  | 0    |
| Right Turn on Red       |       |       | No   |       |       | No   |        |       | No   |        |       | No   |
| Satd. Flow (RTOR)       |       |       |      |       |       |      |        |       |      |        |       |      |
| Link Speed (mph)        |       | 25    |      |       | 30    |      |        | 30    |      |        | 30    |      |
| Link Distance (ft)      |       | 226   |      |       | 149   |      |        | 151   |      |        | 242   |      |
| Travel Time (s)         |       | 6.2   |      |       | 3.4   |      |        | 3.4   |      |        | 5.5   |      |
| Confl. Peds. (#/hr)     |       |       | 2    | 2     |       |      |        |       | 7    | 7      |       |      |
| Peak Hour Factor        | 0.92  | 0.92  | 0.92 | 0.92  | 0.92  | 0.92 | 0.92   | 0.92  | 0.92 | 0.92   | 0.92  | 0.92 |
| Heavy Vehicles (%)      | 2%    | 1%    | 0%   | 0%    | 2%    | 2%   | 2%     | 1%    | 2%   | 8%     | 3%    | 0%   |
| Shared Lane Traffic (%) |       |       |      |       |       |      |        |       |      |        |       |      |
| Lane Group Flow (vph)   | 51    | 152   | 0    | 0     | 274   | 0    | 0      | 555   | 0    | 0      | 462   | 0    |
| Turn Type               | pm+pt | NA    |      | Perm  | NA    |      | custom | NA    |      | custom | NA    |      |
| Protected Phases        | 5     | 5 6   |      |       | 6     |      | 3      | 2 3   |      | 1      | 1 2   |      |
| Permitted Phases        | 5 6   |       |      | 6     |       |      | 2      |       |      | 2      |       |      |
| Detector Phase          | 5     | 5 6   |      | 6     | 6     |      | 3      | 2 3   |      | 1      | 1 2   |      |
| Switch Phase            |       |       |      |       |       |      |        |       |      |        |       |      |
| Minimum Initial (s)     | 6.0   |       |      | 10.0  | 10.0  |      | 6.0    |       |      | 6.0    |       |      |
| Minimum Split (s)       | 11.0  |       |      | 15.0  | 15.0  |      | 13.0   |       |      | 13.0   |       |      |
| Total Split (s)         | 18.0  |       |      | 45.0  | 45.0  |      | 17.0   |       |      | 17.0   |       |      |
| Total Split (%)         | 10.8% |       |      | 27.1% | 27.1% |      | 10.2%  |       |      | 10.2%  |       |      |
| Yellow Time (s)         | 4.0   |       |      | 4.0   | 4.0   |      | 4.0    |       |      | 4.0    |       |      |
| All-Red Time (s)        | 1.0   |       |      | 1.0   | 1.0   |      | 3.0    |       |      | 3.0    |       |      |
| Lost Time Adjust (s)    | 0.0   |       |      |       | 0.0   |      |        |       |      |        |       |      |
| Total Lost Time (s)     | 5.0   |       |      |       | 5.0   |      |        |       |      |        |       |      |
| Lead/Lag                | Lead  |       |      | Lag   | Lag   |      | Lead   |       |      | Lead   |       |      |
| Lead-Lag Optimize?      | Yes   |       |      | Yes   | Yes   |      | Yes    |       |      | Yes    |       |      |
| Recall Mode             | None  |       |      | None  | None  |      | None   |       |      | None   |       |      |
| Act Effct Green (s)     | 36.6  | 41.8  |      |       | 25.8  |      |        | 34.4  |      |        | 38.2  |      |
| Actuated g/C Ratio      | 0.31  | 0.36  |      |       | 0.22  |      |        | 0.29  |      |        | 0.33  |      |
| v/c Ratio               | 0.16  | 0.24  |      |       | 0.81  |      |        | 0.67  |      |        | 0.51  |      |
| Control Delay           | 29.3  | 29.5  |      |       | 64.0  |      |        | 37.3  |      |        | 31.6  |      |
| Queue Delay             | 0.0   | 0.0   |      |       | 0.0   |      |        | 0.0   |      |        | 0.0   |      |
| Total Delay             | 29.3  | 29.5  |      |       | 64.0  |      |        | 37.3  |      |        | 31.6  |      |
| LOS                     | C     | C     |      |       | E     |      |        | D     |      |        | C     |      |
| Approach Delay          |       | 29.5  |      |       | 64.0  |      |        | 37.3  |      |        | 31.6  |      |

| Lane Group              | Ø2   | Ø4   |
|-------------------------|------|------|
| Lane Configurations     |      |      |
| Traffic Volume (vph)    |      |      |
| Future Volume (vph)     |      |      |
| Ideal Flow (vphpl)      |      |      |
| Lane Width (ft)         |      |      |
| Storage Length (ft)     |      |      |
| Storage Lanes           |      |      |
| Taper Length (ft)       |      |      |
| Lane Util. Factor       |      |      |
| Ped Bike Factor         |      |      |
| Frt                     |      |      |
| Flt Protected           |      |      |
| Satd. Flow (prot)       |      |      |
| Flt Permitted           |      |      |
| Satd. Flow (perm)       |      |      |
| Right Turn on Red       |      |      |
| Satd. Flow (RTOR)       |      |      |
| Link Speed (mph)        |      |      |
| Link Distance (ft)      |      |      |
| Travel Time (s)         |      |      |
| Confl. Peds. (#/hr)     |      |      |
| Peak Hour Factor        |      |      |
| Heavy Vehicles (%)      |      |      |
| Shared Lane Traffic (%) |      |      |
| Lane Group Flow (vph)   |      |      |
| Turn Type               |      |      |
| Protected Phases        | 2    | 4    |
| Permitted Phases        |      |      |
| Detector Phase          |      |      |
| Switch Phase            |      |      |
| Minimum Initial (s)     | 8.0  | 6.0  |
| Minimum Split (s)       | 17.0 | 22.0 |
| Total Split (s)         | 47.0 | 22.0 |
| Total Split (%)         | 28%  | 13%  |
| Yellow Time (s)         | 4.0  | 3.0  |
| All-Red Time (s)        | 3.0  | 1.0  |
| Lost Time Adjust (s)    |      |      |
| Total Lost Time (s)     |      |      |
| Lead/Lag                | Lag  | Lag  |
| Lead-Lag Optimize?      | Yes  | Yes  |
| Recall Mode             | Min  | None |
| Act Effct Green (s)     |      |      |
| Actuated g/C Ratio      |      |      |
| v/c Ratio               |      |      |
| Control Delay           |      |      |
| Queue Delay             |      |      |
| Total Delay             |      |      |
| LOS                     |      |      |
| Approach Delay          |      |      |

Proposed Bank, Reading  
 1: Main Street (Route 28) & Washington Street

2030 Build  
 Weekday Morning Peak Hour



| Lane Group              | EBL  | EBT  | EBR | WBL | WBT  | WBR | NBL | NBT  | NBR  | SBL | SBT | SBR |
|-------------------------|------|------|-----|-----|------|-----|-----|------|------|-----|-----|-----|
| Approach LOS            | C    |      |     |     | E    |     | D   |      | C    |     |     |     |
| Queue Length 50th (ft)  | 23   | 74   |     |     | 185  |     |     | 156  | 118  |     |     |     |
| Queue Length 95th (ft)  | 69   | 175  |     |     | 386  |     |     | 311  | 249  |     |     |     |
| Internal Link Dist (ft) | 146  |      |     |     | 69   |     |     | 71   | 162  |     |     |     |
| Turn Bay Length (ft)    | 95   |      |     |     |      |     |     |      |      |     |     |     |
| Base Capacity (vph)     | 357  | 866  |     |     | 552  |     |     | 1124 | 1205 |     |     |     |
| Starvation Cap Reductn  | 0    | 0    |     |     | 0    |     |     | 0    | 0    |     |     |     |
| Spillback Cap Reductn   | 0    | 0    |     |     | 0    |     |     | 0    | 0    |     |     |     |
| Storage Cap Reductn     | 0    | 0    |     |     | 0    |     |     | 0    | 0    |     |     |     |
| Reduced v/c Ratio       | 0.14 | 0.18 |     |     | 0.50 |     |     | 0.49 | 0.38 |     |     |     |

Intersection Summary

|                                    |                        |
|------------------------------------|------------------------|
| Area Type:                         | Other                  |
| Cycle Length:                      | 166                    |
| Actuated Cycle Length:             | 117.1                  |
| Natural Cycle:                     | 95                     |
| Control Type:                      | Actuated-Uncoordinated |
| Maximum v/c Ratio:                 | 0.81                   |
| Intersection Signal Delay:         | 39.4                   |
| Intersection LOS:                  | D                      |
| Intersection Capacity Utilization: | 67.8%                  |
| ICU Level of Service:              | C                      |
| Analysis Period (min):             | 15                     |

Splits and Phases: 1: Main Street (Route 28) & Washington Street

|      |      |      |      |      |      |
|------|------|------|------|------|------|
|      |      |      |      |      |      |
| Ø1   | Ø2   | Ø3   | Ø4   | Ø5   | Ø6   |
| 17 s | 47 s | 17 s | 22 s | 18 s | 45 s |

| Lane Group              | Ø2 | Ø4 |
|-------------------------|----|----|
| Approach LOS            |    |    |
| Queue Length 50th (ft)  |    |    |
| Queue Length 95th (ft)  |    |    |
| Internal Link Dist (ft) |    |    |
| Turn Bay Length (ft)    |    |    |
| Base Capacity (vph)     |    |    |
| Starvation Cap Reductn  |    |    |
| Spillback Cap Reductn   |    |    |
| Storage Cap Reductn     |    |    |
| Reduced v/c Ratio       |    |    |
| Intersection Summary    |    |    |



| Intersection             |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh         | 0.1  |      |      |      |      |      |
| Movement                 | WBL  | WBR  | NBT  | NBR  | SBL  | SBT  |
| Lane Configurations      |      | ↗    | ↕↔   |      |      | ↕↕   |
| Traffic Vol, veh/h       | 0    | 14   | 496  | 16   | 0    | 441  |
| Future Vol, veh/h        | 0    | 14   | 496  | 16   | 0    | 441  |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Stop | Stop | Free | Free | Free | Free |
| RT Channelized           | -    | None | -    | None | -    | None |
| Storage Length           | -    | 0    | -    | -    | -    | -    |
| Veh in Median Storage, # | 0    | -    | 0    | -    | -    | 0    |
| Grade, %                 | 0    | -    | 0    | -    | -    | 0    |
| Peak Hour Factor         | 92   | 92   | 92   | 92   | 92   | 92   |
| Heavy Vehicles, %        | 0    | 0    | 2    | 0    | 0    | 3    |
| Mvmt Flow                | 0    | 15   | 539  | 17   | 0    | 479  |

| Major/Minor          | Minor1 | Major1 | Major2 |   |   |
|----------------------|--------|--------|--------|---|---|
| Conflicting Flow All | -      | 278    | 0      | 0 | - |
| Stage 1              | -      | -      | -      | - | - |
| Stage 2              | -      | -      | -      | - | - |
| Critical Hdwy        | -      | 6.9    | -      | - | - |
| Critical Hdwy Stg 1  | -      | -      | -      | - | - |
| Critical Hdwy Stg 2  | -      | -      | -      | - | - |
| Follow-up Hdwy       | -      | 3.3    | -      | - | - |
| Pot Cap-1 Maneuver   | 0      | 725    | -      | - | 0 |
| Stage 1              | 0      | -      | -      | - | 0 |
| Stage 2              | 0      | -      | -      | - | 0 |
| Platoon blocked, %   |        |        | -      | - | - |
| Mov Cap-1 Maneuver   | -      | 725    | -      | - | - |
| Mov Cap-2 Maneuver   | -      | -      | -      | - | - |
| Stage 1              | -      | -      | -      | - | - |
| Stage 2              | -      | -      | -      | - | - |

| Approach             | WB   | NB | SB |
|----------------------|------|----|----|
| HCM Control Delay, s | 10.1 | 0  | 0  |
| HCM LOS              | B    |    |    |

| Minor Lane/Major Mvmt | NBT | NBRWBLn1 | SBT   |
|-----------------------|-----|----------|-------|
| Capacity (veh/h)      | -   | -        | 725   |
| HCM Lane V/C Ratio    | -   | -        | 0.021 |
| HCM Control Delay (s) | -   | -        | 10.1  |
| HCM Lane LOS          | -   | -        | B     |
| HCM 95th %tile Q(veh) | -   | -        | 0.1   |

| Intersection             |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh         | 0.1  |      |      |      |      |      |
| Movement                 | EBT  | EBR  | WBL  | WBT  | NBL  | NBR  |
| Lane Configurations      | ↔    |      |      | ↑    |      | ↗    |
| Traffic Vol, veh/h       | 215  | 9    | 0    | 248  | 0    | 4    |
| Future Vol, veh/h        | 215  | 9    | 0    | 248  | 0    | 4    |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Stop | Stop |
| RT Channelized           | -    | None | -    | None | -    | None |
| Storage Length           | -    | -    | -    | -    | -    | 0    |
| Veh in Median Storage, # | 0    | -    | -    | 0    | 0    | -    |
| Grade, %                 | 0    | -    | -    | 0    | 0    | -    |
| Peak Hour Factor         | 92   | 92   | 92   | 92   | 92   | 92   |
| Heavy Vehicles, %        | 3    | 0    | 0    | 2    | 0    | 0    |
| Mvmt Flow                | 234  | 10   | 0    | 270  | 0    | 4    |

| Major/Minor          | Major1 | Major2 | Minor1 |   |   |     |
|----------------------|--------|--------|--------|---|---|-----|
| Conflicting Flow All | 0      | 0      | -      | - | - | 239 |
| Stage 1              | -      | -      | -      | - | - | -   |
| Stage 2              | -      | -      | -      | - | - | -   |
| Critical Hdwy        | -      | -      | -      | - | - | 6.2 |
| Critical Hdwy Stg 1  | -      | -      | -      | - | - | -   |
| Critical Hdwy Stg 2  | -      | -      | -      | - | - | -   |
| Follow-up Hdwy       | -      | -      | -      | - | - | 3.3 |
| Pot Cap-1 Maneuver   | -      | -      | 0      | - | 0 | 805 |
| Stage 1              | -      | -      | 0      | - | 0 | -   |
| Stage 2              | -      | -      | 0      | - | 0 | -   |
| Platoon blocked, %   | -      | -      | -      | - | - | -   |
| Mov Cap-1 Maneuver   | -      | -      | -      | - | - | 805 |
| Mov Cap-2 Maneuver   | -      | -      | -      | - | - | -   |
| Stage 1              | -      | -      | -      | - | - | -   |
| Stage 2              | -      | -      | -      | - | - | -   |

| Approach             | EB | WB | NB  |
|----------------------|----|----|-----|
| HCM Control Delay, s | 0  | 0  | 9.5 |
| HCM LOS              |    |    | A   |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBT |
|-----------------------|-------|-----|-----|-----|
| Capacity (veh/h)      | 805   | -   | -   | -   |
| HCM Lane V/C Ratio    | 0.005 | -   | -   | -   |
| HCM Control Delay (s) | 9.5   | -   | -   | -   |
| HCM Lane LOS          | A     | -   | -   | -   |
| HCM 95th %tile Q(veh) | 0     | -   | -   | -   |

Proposed Bank, Reading  
1: Main Street (Route 28) & Washington Street

2030 Build  
Weekday Afternoon Peak Hour



| Lane Group              | EBL   | EBT   | EBR  | WBL   | WBT   | WBR  | NBL    | NBT   | NBR  | SBL    | SBT   | SBR  |
|-------------------------|-------|-------|------|-------|-------|------|--------|-------|------|--------|-------|------|
| Lane Configurations     |       |       |      |       |       |      |        |       |      |        |       |      |
| Traffic Volume (vph)    | 48    | 194   | 20   | 67    | 215   | 83   | 138    | 560   | 61   | 55     | 321   | 16   |
| Future Volume (vph)     | 48    | 194   | 20   | 67    | 215   | 83   | 138    | 560   | 61   | 55     | 321   | 16   |
| Ideal Flow (vphpl)      | 1900  | 1900  | 1900 | 1900  | 1900  | 1900 | 1900   | 1900  | 1900 | 1900   | 1900  | 1900 |
| Lane Width (ft)         | 11    | 11    | 11   | 11    | 11    | 11   | 11     | 11    | 11   | 11     | 11    | 11   |
| Storage Length (ft)     | 95    |       | 0    | 0     |       | 0    | 0      |       | 0    | 0      |       | 0    |
| Storage Lanes           | 1     |       | 0    | 0     |       | 0    | 0      |       | 0    | 0      |       | 0    |
| Taper Length (ft)       | 25    |       |      | 25    |       |      | 25     |       |      | 25     |       |      |
| Lane Util. Factor       | 1.00  | 1.00  | 1.00 | 1.00  | 1.00  | 1.00 | 0.95   | 0.95  | 0.95 | 0.95   | 0.95  | 0.95 |
| Ped Bike Factor         |       | 1.00  |      |       | 1.00  |      |        | 1.00  |      |        | 1.00  |      |
| Frt                     |       | 0.986 |      |       | 0.969 |      |        | 0.988 |      |        | 0.994 |      |
| Flt Protected           | 0.950 |       |      |       | 0.991 |      |        | 0.991 |      |        | 0.993 |      |
| Satd. Flow (prot)       | 1745  | 1791  | 0    | 0     | 1760  | 0    | 0      | 3407  | 0    | 0      | 3383  | 0    |
| Flt Permitted           | 0.335 |       |      |       | 0.884 |      |        | 0.766 |      |        | 0.562 |      |
| Satd. Flow (perm)       | 615   | 1791  | 0    | 0     | 1567  | 0    | 0      | 2633  | 0    | 0      | 1914  | 0    |
| Right Turn on Red       |       |       | No   |       |       | No   |        |       | No   |        |       | No   |
| Satd. Flow (RTOR)       |       |       |      |       |       |      |        |       |      |        |       |      |
| Link Speed (mph)        |       | 25    |      |       | 30    |      |        | 30    |      |        | 30    |      |
| Link Distance (ft)      |       | 226   |      |       | 149   |      |        | 151   |      |        | 242   |      |
| Travel Time (s)         |       | 6.2   |      |       | 3.4   |      |        | 3.4   |      |        | 5.5   |      |
| Confl. Peds. (#/hr)     |       |       | 9    | 9     |       |      |        |       | 12   | 12     |       |      |
| Peak Hour Factor        | 0.92  | 0.92  | 0.92 | 0.92  | 0.92  | 0.92 | 0.92   | 0.92  | 0.92 | 0.92   | 0.92  | 0.92 |
| Heavy Vehicles (%)      | 0%    | 1%    | 0%   | 0%    | 0%    | 1%   | 0%     | 0%    | 0%   | 7%     | 1%    | 0%   |
| Shared Lane Traffic (%) |       |       |      |       |       |      |        |       |      |        |       |      |
| Lane Group Flow (vph)   | 52    | 233   | 0    | 0     | 397   | 0    | 0      | 825   | 0    | 0      | 426   | 0    |
| Turn Type               | pm+pt | NA    |      | Perm  | NA    |      | custom | NA    |      | custom | NA    |      |
| Protected Phases        | 5     | 5 6   |      |       | 6     |      | 3      | 2 3   |      | 1      | 1 2   |      |
| Permitted Phases        | 5 6   |       |      | 6     |       |      | 2      |       |      | 2      |       |      |
| Detector Phase          | 5     | 5 6   |      | 6     | 6     |      | 3      | 2 3   |      | 1      | 1 2   |      |
| Switch Phase            |       |       |      |       |       |      |        |       |      |        |       |      |
| Minimum Initial (s)     | 6.0   |       |      | 10.0  | 10.0  |      | 6.0    |       |      | 6.0    |       |      |
| Minimum Split (s)       | 11.0  |       |      | 15.0  | 15.0  |      | 13.0   |       |      | 13.0   |       |      |
| Total Split (s)         | 20.0  |       |      | 50.0  | 50.0  |      | 25.0   |       |      | 15.0   |       |      |
| Total Split (%)         | 10.6% |       |      | 26.5% | 26.5% |      | 13.2%  |       |      | 7.9%   |       |      |
| Yellow Time (s)         | 4.0   |       |      | 4.0   | 4.0   |      | 4.0    |       |      | 4.0    |       |      |
| All-Red Time (s)        | 1.0   |       |      | 1.0   | 1.0   |      | 3.0    |       |      | 3.0    |       |      |
| Lost Time Adjust (s)    | 0.0   |       |      |       | 0.0   |      |        |       |      |        |       |      |
| Total Lost Time (s)     | 5.0   |       |      |       | 5.0   |      |        |       |      |        |       |      |
| Lead/Lag                | Lead  |       |      | Lag   | Lag   |      | Lead   |       |      | Lead   |       |      |
| Lead-Lag Optimize?      | Yes   |       |      | Yes   | Yes   |      | Yes    |       |      | Yes    |       |      |
| Recall Mode             | None  |       |      | None  | None  |      | None   |       |      | None   |       |      |
| Act Effct Green (s)     | 59.8  | 64.8  |      |       | 45.4  |      |        | 56.5  |      |        | 54.8  |      |
| Actuated g/C Ratio      | 0.38  | 0.41  |      |       | 0.28  |      |        | 0.35  |      |        | 0.34  |      |
| v/c Ratio               | 0.16  | 0.32  |      |       | 0.89  |      |        | 0.84  |      |        | 0.58  |      |
| Control Delay           | 34.2  | 36.3  |      |       | 77.8  |      |        | 52.0  |      |        | 42.8  |      |
| Queue Delay             | 0.0   | 0.0   |      |       | 0.0   |      |        | 0.0   |      |        | 0.0   |      |
| Total Delay             | 34.2  | 36.3  |      |       | 77.8  |      |        | 52.0  |      |        | 42.8  |      |
| LOS                     | C     | D     |      |       | E     |      |        | D     |      |        | D     |      |
| Approach Delay          |       | 35.9  |      |       | 77.8  |      |        | 52.0  |      |        | 42.8  |      |

| Lane Group              | Ø2   | Ø4   |
|-------------------------|------|------|
| Lane Configurations     |      |      |
| Traffic Volume (vph)    |      |      |
| Future Volume (vph)     |      |      |
| Ideal Flow (vphpl)      |      |      |
| Lane Width (ft)         |      |      |
| Storage Length (ft)     |      |      |
| Storage Lanes           |      |      |
| Taper Length (ft)       |      |      |
| Lane Util. Factor       |      |      |
| Ped Bike Factor         |      |      |
| Frt                     |      |      |
| Flt Protected           |      |      |
| Satd. Flow (prot)       |      |      |
| Flt Permitted           |      |      |
| Satd. Flow (perm)       |      |      |
| Right Turn on Red       |      |      |
| Satd. Flow (RTOR)       |      |      |
| Link Speed (mph)        |      |      |
| Link Distance (ft)      |      |      |
| Travel Time (s)         |      |      |
| Confl. Peds. (#/hr)     |      |      |
| Peak Hour Factor        |      |      |
| Heavy Vehicles (%)      |      |      |
| Shared Lane Traffic (%) |      |      |
| Lane Group Flow (vph)   |      |      |
| Turn Type               |      |      |
| Protected Phases        | 2    | 4    |
| Permitted Phases        |      |      |
| Detector Phase          |      |      |
| Switch Phase            |      |      |
| Minimum Initial (s)     | 10.0 | 6.0  |
| Minimum Split (s)       | 17.0 | 22.0 |
| Total Split (s)         | 57.0 | 22.0 |
| Total Split (%)         | 30%  | 12%  |
| Yellow Time (s)         | 4.0  | 3.0  |
| All-Red Time (s)        | 3.0  | 1.0  |
| Lost Time Adjust (s)    |      |      |
| Total Lost Time (s)     |      |      |
| Lead/Lag                | Lag  | Lag  |
| Lead-Lag Optimize?      | Yes  | Yes  |
| Recall Mode             | Min  | None |
| Act Effct Green (s)     |      |      |
| Actuated g/C Ratio      |      |      |
| v/c Ratio               |      |      |
| Control Delay           |      |      |
| Queue Delay             |      |      |
| Total Delay             |      |      |
| LOS                     |      |      |
| Approach Delay          |      |      |



Proposed Bank, Reading  
 1: Main Street (Route 28) & Washington Street

2030 Build  
 Weekday Afternoon Peak Hour

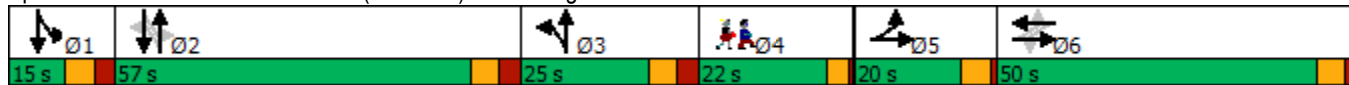


| Lane Group              | EBL  | EBT  | EBR | WBL | WBT  | WBR | NBL | NBT  | NBR | SBL | SBT  | SBR |
|-------------------------|------|------|-----|-----|------|-----|-----|------|-----|-----|------|-----|
| Approach LOS            |      | D    |     |     | E    |     |     | D    |     |     | D    |     |
| Queue Length 50th (ft)  | 32   | 161  |     |     | 394  |     |     | 342  |     |     | 154  |     |
| Queue Length 95th (ft)  | 81   | 306  |     |     | #770 |     |     | 503  |     |     | 263  |     |
| Internal Link Dist (ft) |      | 146  |     |     | 69   |     |     | 71   |     |     | 162  |     |
| Turn Bay Length (ft)    | 95   |      |     |     |      |     |     |      |     |     |      |     |
| Base Capacity (vph)     | 341  | 724  |     |     | 446  |     |     | 1202 |     |     | 777  |     |
| Starvation Cap Reductn  | 0    | 0    |     |     | 0    |     |     | 0    |     |     | 0    |     |
| Spillback Cap Reductn   | 0    | 0    |     |     | 0    |     |     | 0    |     |     | 0    |     |
| Storage Cap Reductn     | 0    | 0    |     |     | 0    |     |     | 0    |     |     | 0    |     |
| Reduced v/c Ratio       | 0.15 | 0.32 |     |     | 0.89 |     |     | 0.69 |     |     | 0.55 |     |

Intersection Summary

Area Type: Other  
 Cycle Length: 189  
 Actuated Cycle Length: 159.4  
 Natural Cycle: 135  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.89  
 Intersection Signal Delay: 52.9  
 Intersection LOS: D  
 Intersection Capacity Utilization 84.1%  
 ICU Level of Service E  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

Splits and Phases: 1: Main Street (Route 28) & Washington Street



---

| Lane Group              | Ø2 | Ø4 |
|-------------------------|----|----|
| Approach LOS            |    |    |
| Queue Length 50th (ft)  |    |    |
| Queue Length 95th (ft)  |    |    |
| Internal Link Dist (ft) |    |    |
| Turn Bay Length (ft)    |    |    |
| Base Capacity (vph)     |    |    |
| Starvation Cap Reductn  |    |    |
| Spillback Cap Reductn   |    |    |
| Storage Cap Reductn     |    |    |
| Reduced v/c Ratio       |    |    |
| Intersection Summary    |    |    |

---

| Intersection             |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh         | 0.2  |      |      |      |      |      |
| Movement                 | WBL  | WBR  | NBT  | NBR  | SBL  | SBT  |
| Lane Configurations      |      | ↗    | ↕    |      |      | ↕    |
| Traffic Vol, veh/h       | 0    | 22   | 737  | 17   | 0    | 410  |
| Future Vol, veh/h        | 0    | 22   | 737  | 17   | 0    | 410  |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Stop | Stop | Free | Free | Free | Free |
| RT Channelized           | -    | None | -    | None | -    | None |
| Storage Length           | -    | 0    | -    | -    | -    | -    |
| Veh in Median Storage, # | 0    | -    | 0    | -    | -    | 0    |
| Grade, %                 | 0    | -    | 0    | -    | -    | 0    |
| Peak Hour Factor         | 92   | 92   | 92   | 92   | 92   | 92   |
| Heavy Vehicles, %        | 0    | 0    | 0    | 0    | 0    | 1    |
| Mvmt Flow                | 0    | 24   | 801  | 18   | 0    | 446  |

| Major/Minor          | Minor1 | Major1 | Major2 |   |   |   |
|----------------------|--------|--------|--------|---|---|---|
| Conflicting Flow All | -      | 410    | 0      | 0 | - | - |
| Stage 1              | -      | -      | -      | - | - | - |
| Stage 2              | -      | -      | -      | - | - | - |
| Critical Hdwy        | -      | 6.9    | -      | - | - | - |
| Critical Hdwy Stg 1  | -      | -      | -      | - | - | - |
| Critical Hdwy Stg 2  | -      | -      | -      | - | - | - |
| Follow-up Hdwy       | -      | 3.3    | -      | - | - | - |
| Pot Cap-1 Maneuver   | 0      | 596    | -      | - | 0 | - |
| Stage 1              | 0      | -      | -      | - | 0 | - |
| Stage 2              | 0      | -      | -      | - | 0 | - |
| Platoon blocked, %   |        |        | -      | - | - | - |
| Mov Cap-1 Maneuver   | -      | 596    | -      | - | - | - |
| Mov Cap-2 Maneuver   | -      | -      | -      | - | - | - |
| Stage 1              | -      | -      | -      | - | - | - |
| Stage 2              | -      | -      | -      | - | - | - |

| Approach             | WB   | NB | SB |
|----------------------|------|----|----|
| HCM Control Delay, s | 11.3 | 0  | 0  |
| HCM LOS              | B    |    |    |

| Minor Lane/Major Mvmt | NBT | NBRWBLn1 | SBT  |
|-----------------------|-----|----------|------|
| Capacity (veh/h)      | -   | -        | 596  |
| HCM Lane V/C Ratio    | -   | -        | 0.04 |
| HCM Control Delay (s) | -   | -        | 11.3 |
| HCM Lane LOS          | -   | -        | B    |
| HCM 95th %tile Q(veh) | -   | -        | 0.1  |

| Intersection             |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh         | 0.1  |      |      |      |      |      |
| Movement                 | EBT  | EBR  | WBL  | WBT  | NBL  | NBR  |
| Lane Configurations      | ↔    |      |      | ↑    |      | ↗    |
| Traffic Vol, veh/h       | 293  | 17   | 0    | 365  | 0    | 10   |
| Future Vol, veh/h        | 293  | 17   | 0    | 365  | 0    | 10   |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Stop | Stop |
| RT Channelized           | -    | None | -    | None | -    | None |
| Storage Length           | -    | -    | -    | -    | -    | 0    |
| Veh in Median Storage, # | 0    | -    | -    | 0    | 0    | -    |
| Grade, %                 | 0    | -    | -    | 0    | 0    | -    |
| Peak Hour Factor         | 92   | 92   | 92   | 92   | 92   | 92   |
| Heavy Vehicles, %        | 2    | 0    | 0    | 1    | 0    | 0    |
| Mvmt Flow                | 318  | 18   | 0    | 397  | 0    | 11   |

| Major/Minor          | Major1 | Major2 | Minor1 |   |   |     |
|----------------------|--------|--------|--------|---|---|-----|
| Conflicting Flow All | 0      | 0      | -      | - | - | 327 |
| Stage 1              | -      | -      | -      | - | - | -   |
| Stage 2              | -      | -      | -      | - | - | -   |
| Critical Hdwy        | -      | -      | -      | - | - | 6.2 |
| Critical Hdwy Stg 1  | -      | -      | -      | - | - | -   |
| Critical Hdwy Stg 2  | -      | -      | -      | - | - | -   |
| Follow-up Hdwy       | -      | -      | -      | - | - | 3.3 |
| Pot Cap-1 Maneuver   | -      | -      | 0      | - | 0 | 719 |
| Stage 1              | -      | -      | 0      | - | 0 | -   |
| Stage 2              | -      | -      | 0      | - | 0 | -   |
| Platoon blocked, %   | -      | -      | -      | - | - | -   |
| Mov Cap-1 Maneuver   | -      | -      | -      | - | - | 719 |
| Mov Cap-2 Maneuver   | -      | -      | -      | - | - | -   |
| Stage 1              | -      | -      | -      | - | - | -   |
| Stage 2              | -      | -      | -      | - | - | -   |

| Approach             | EB | WB | NB   |
|----------------------|----|----|------|
| HCM Control Delay, s | 0  | 0  | 10.1 |
| HCM LOS              |    |    | B    |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBT |
|-----------------------|-------|-----|-----|-----|
| Capacity (veh/h)      | 719   | -   | -   | -   |
| HCM Lane V/C Ratio    | 0.015 | -   | -   | -   |
| HCM Control Delay (s) | 10.1  | -   | -   | -   |
| HCM Lane LOS          | B     | -   | -   | -   |
| HCM 95th %tile Q(veh) | 0     | -   | -   | -   |



## **APPENDIX I**

### **Capacity/Level-of-Service Analysis Summary**

## CAPACITY ANALYSIS SUMMARY

**Weekday Morning Peak Hour**

**Proposed Bank**

**Reading, MA**

| Intersection  | Movement       | 2023 Existing    |                    |                  | 2030 No Build |             |             | 2030 Build |             |             |
|---|----------------|------------------|--------------------|------------------|---------------|-------------|-------------|------------|-------------|-------------|
|   |                | LOS <sup>1</sup> | Delay <sup>2</sup> | V/C <sup>3</sup> | LOS           | Delay       | V/C         | LOS        | Delay       | V/C         |
| Main Street (Route 28) at<br>Washington Street      | EB L           | C                | 28.0               | 0.18             | C             | 28.9        | 0.16        | C          | 29.3        | 0.16        |
|   | TR             | C                | 28.2               | 0.24             | C             | 29.1        | 0.23        | C          | 29.5        | 0.24        |
|   | WB LTR         | E                | 61.6               | 0.82             | E             | 63.3        | 0.80        | E          | 64.0        | 0.81        |
|   | NB LTR         | D                | 39.4               | 0.66             | D             | 36.6        | 0.65        | D          | 37.3        | 0.67        |
|   | SB LTR         | C                | 33.7               | 0.50             | C             | 31.3        | 0.50        | C          | 31.6        | 0.51        |
|   | <i>Overall</i> | <i>D</i>         | <i>40.8</i>        | <i>0.65</i>      | <i>D</i>      | <i>38.9</i> | <i>0.67</i> | <i>D</i>   | <i>39.4</i> | <i>0.68</i> |
| Main Street (Route 28) at<br>Southern Site Driveway | WB LR          | B                | 13.7               | 0.03             | B             | 14.0        | 0.02        | -          | -           | -           |
|   | R              | -                | -                  | -                | -             | -           | -           | B          | 10.1        | 0.02        |
|   | NB TR          | A                | 0.0                | 0.00             | A             | 0.00        | 0.00        | A          | 0.0         | 0.00        |
|   | SB LT          | A                | 0.0                | 0.00             | A             | 0.00        | 0.00        | -          | -           | -           |
|   | T              | -                | -                  | -                | -             | -           | -           | A          | 0.0         | 0.00        |
| Washington Street at<br>Eastern Site Driveway       | EB TR          | A                | 0.0                | 0.00             | A             | 0.0         | 0.00        | A          | 0.0         | 0.00        |
|   | WB LT          | A                | 0.1                | 0.00             | A             | 0.1         | 0.00        | A          | 0.0         | 0.00        |
|   | NB LR          | B                | 11.3               | 0.01             | B             | 10.7        | 0.01        | -          | -           | -           |
|   | R              | -                | -                  | -                | -             | -           | -           | A          | 9.5         | 0.01        |

1 Level-of-Service

2 Average vehicle delay in seconds

3 Volume to capacity ratio

- Not Applicable

## QUEUE SUMMARY

**Weekday Morning Peak Hour**

**Proposed Bank**

**Reading, MA**

| Intersection  | Movement | 2023 Existing           |                         | 2030 No Build |            | 2030 Build |            |
|---|----------|-------------------------|-------------------------|---------------|------------|------------|------------|
|   |          | 50th Queue <sup>1</sup> | 95th Queue <sup>2</sup> | 50th Queue    | 95th Queue | 50th Queue | 95th Queue |
| Main Street (Route 28) at<br>Washington Street      | EB L     | 27                      | 67                      | 23            | 71         | 23         | 69         |
|   | TR       | 80                      | 162                     | 70            | 171        | 74         | 175        |
|   | WB LTR   | 223                     | 361                     | 181           | 385        | 185        | 386        |
|   | NB LTR   | 163                     | 295                     | 151           | 303        | 156        | 311        |
|   | SB LTR   | 121                     | 231                     | 116           | 247        | 118        | 249        |
| Main Street (Route 28) at<br>Southern Site Driveway | WB LR    | -                       | 3                       | -             | 0          | -          | -          |
|   | R        | -                       | -                       | -             | -          | -          | 3          |
|   | NB TR    | -                       | 0                       | -             | 0          | -          | 0          |
|   | SB LT    | -                       | 0                       | -             | 0          | -          | -          |
|   | T        | -                       | -                       | -             | -          | -          | 0          |
| Washington Street at<br>Eastern Site Driveway       | EB TR    | -                       | 0                       | -             | 0          | -          | 0          |
|   | WB LT    | -                       | 0                       | -             | 0          | -          | 0          |
|   | NB LR    | -                       | 0                       | -             | 0          | -          | -          |
|   | R        | -                       | -                       | -             | -          | -          | 0          |

<sup>1</sup> 50th Percentile Queue Length (ft)

<sup>2</sup> 95th Percentile Queue Length (ft)

- Not Applicable

## CAPACITY ANALYSIS SUMMARY

**Weekday Afternoon Peak Hour**

**Proposed Bank**

**Reading, MA**

| Intersection  | Movement       | 2023 Existing    |                    |                  | 2030 No Build |             |             | 2030 Build |             |             |
|---|----------------|------------------|--------------------|------------------|---------------|-------------|-------------|------------|-------------|-------------|
|   |                | LOS <sup>1</sup> | Delay <sup>2</sup> | V/C <sup>3</sup> | LOS           | Delay       | V/C         | LOS        | Delay       | V/C         |
| Main Street (Route 28) at<br>Washington Street      | EB L           | C                | 31.9               | 0.17             | C             | 33.9        | 0.16        | C          | 34.2        | 0.16        |
|   | TR             | C                | 33.5               | 0.32             | D             | 35.6        | 0.31        | D          | 36.3        | 0.32        |
|   | WB LTR         | E                | 75.9               | 0.90             | E             | 75.1        | 0.88        | E          | 77.8        | 0.89        |
|   | NB LTR         | D                | 49.1               | 0.79             | D             | 50.8        | 0.83        | D          | 52.0        | 0.84        |
|   | SB LTR         | D                | 41.0               | 0.53             | D             | 42.3        | 0.56        | D          | 42.8        | 0.58        |
|   | <i>Overall</i> | <i>D</i>         | <i>50.9</i>        | <i>0.80</i>      | <i>D</i>      | <i>51.7</i> | <i>0.83</i> | <i>D</i>   | <i>52.9</i> | <i>0.84</i> |
| Main Street (Route 28) at<br>Southern Site Driveway | WB LR          | B                | 14.7               | 0.02             | C             | 15.9        | 0.01        | -          | -           | -           |
|   | R              | -                | -                  | -                | -             | -           | -           | B          | 11.3        | 0.04        |
|   | NB TR          | A                | 0.0                | 0.00             | A             | 0.0         | 0.00        | A          | 0.0         | 0.00        |
|   | SB LT          | A                | 0.0                | 0.00             | A             | 0.0         | 0.00        | -          | -           | -           |
|   | T              | -                | -                  | -                | -             | -           | -           | A          | 0.0         | 0.00        |
| Washington Street at<br>Eastern Site Driveway       | EB TR          | A                | 0.0                | 0.00             | A             | 0.0         | 0.00        | A          | 0.0         | 0.00        |
|   | WB LT          | A                | 0.1                | 0.01             | A             | 0.1         | 0.01        | A          | 0.0         | 0.00        |
|   | NB LR          | A                | 9.9                | 0.01             | B             | 10.0        | 0.01        | -          | -           | -           |
|   | R              | -                | -                  | -                | -             | -           | -           | B          | 10.1        | 0.02        |

1 Level-of-Service

2 Average vehicle delay in seconds

3 Volume to capacity ratio

- Not Applicable



## QUEUE SUMMARY

**Weekday Afternoon Peak Hour**

**Proposed Bank**

**Reading, MA**

| Intersection  | Movement | 2023 Existing           |                         | 2030 No Build |            | 2030 Build |            |
|---|----------|-------------------------|-------------------------|---------------|------------|------------|------------|
|   |          | 50th Queue <sup>1</sup> | 95th Queue <sup>2</sup> | 50th Queue    | 95th Queue | 50th Queue | 95th Queue |
| Main Street (Route 28) at<br>Washington Street      | EB L     | 32                      | 79                      | 33            | 83         | 32         | 81         |
|   | TR       | 150                     | 281                     | 153           | 298        | 161        | 306        |
|   | WB LTR   | 393                     | 711                     | 388           | 768        | 394        | 770        |
|   | NB LTR   | 291                     | 434                     | 332           | 489        | 342        | 503        |
|   | SB LTR   | 140                     | 236                     | 152           | 259        | 154        | 263        |
| Main Street (Route 28) at<br>Southern Site Driveway | WB LR    | -                       | 3                       | -             | 0          | -          | -          |
|   | R        | -                       | -                       | -             | -          | -          | 3          |
|   | NB TR    | -                       | 0                       | -             | 0          | -          | 0          |
|   | SB LT    | -                       | 0                       | -             | 0          | -          | -          |
|   | T        | -                       | -                       | -             | -          | -          | 0          |
| Washington Street at<br>Eastern Site Driveway       | EB TR    | -                       | 0                       | -             | 0          | -          | 0          |
|   | WB LT    | -                       | 0                       | -             | 0          | -          | 0          |
|   | NB LR    | -                       | 0                       | -             | 0          | -          | -          |
|   | R        | -                       | -                       | -             | -          | -          | 0          |

<sup>1</sup> 50th Percentile Queue Length (ft)

<sup>2</sup> 95th Percentile Queue Length (ft)

- Not Applicable



CHS.NB.1160

READING

431 Main Street  
Reading, MA 01867



REVISION NOTES:

10.17.22 JM Updated Site Plans, Creating Day 2 Installations.



B102357



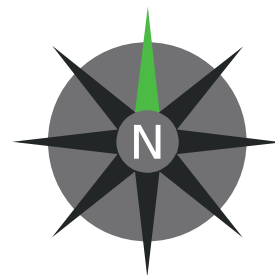
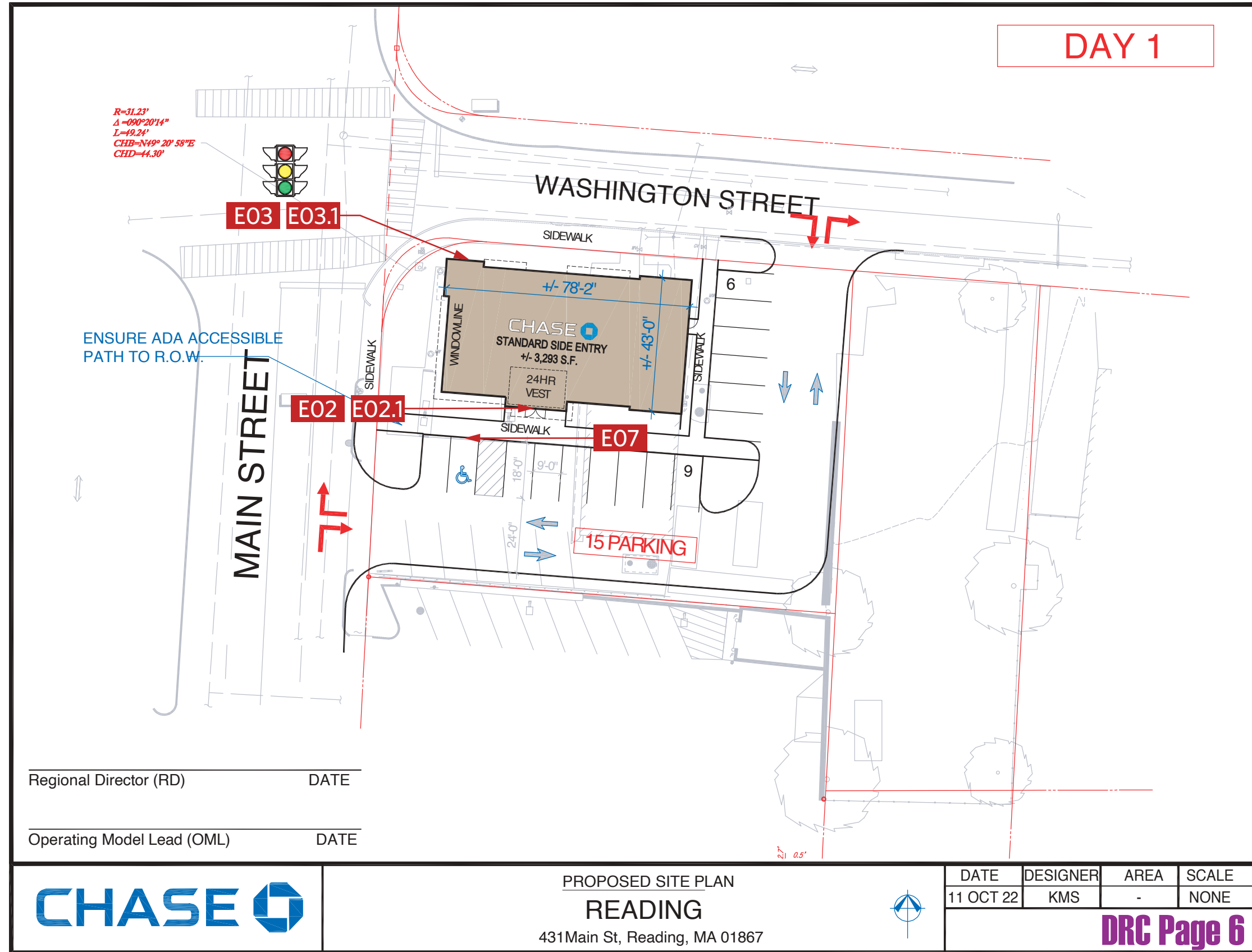




# Site Plan

## Exterior Scope of Work - DAY 1

|       |                  |  |        |
|-------|------------------|--|--------|
| E02   | LIH-WBO-24-LED   | WHITE W/ BLUE OCTAGON HALO-LIT CHANNEL LETTERS               | 36.9SF |
| E02.1 | CHS.PP_RE_24LTR  | RACEWAY FOR 24" LETTERSET TO BE INSTALLED BEHIND THE PARAPET | TBD    |
| E03   | LIH-WBO-24-LED   | WHITE W/ BLUE OCTAGON HALO-LIT CHANNEL LETTERS               | 36.9SF |
| E03.1 | CHS.PP_RE_24LTR  | RACEWAY FOR 24" LETTERSET TO BE INSTALLED BEHIND THE PARAPET | TBD    |
| E07   | TC-P-ADA-V-RE-MA | POLE MOUNTED ADA PARKING REGULATORY SIGN W/ VAN ACCESS       | 2SF    |
| E11   | CSS-FS           | "COMING SOON" FENCE MOUNTED SIGN                             | 60SF   |



- Exterior Signs
- Interior Signs

Regional Director (RD) \_\_\_\_\_ DATE \_\_\_\_\_

Operating Model Lead (OML) \_\_\_\_\_ DATE \_\_\_\_\_



PROPOSED SITE PLAN

READING

431 Main St, Reading, MA 01867

| DATE      | DESIGNER | AREA | SCALE |
|-----------|----------|------|-------|
| 11 OCT 22 | KMS      | -    | NONE  |

**DRC Page 6**



CHS.NB.1160 - Reading

431 Main Street  
Reading, MA 01867

DESIGNER - JM

CREATED - 09.24.22

DRAWING - B102357



PHILADELPHIASIGN

BRINGING THE WORLD'S BRANDS TO LIFE

707 WEST SPRING GARDEN ST • PALMYRA, NJ • 08065  
P: 856-829-1460 • F: 856-829-8549 • WEB: <http://www.philadelphiasign.com>

THIS IS AN ORIGINAL UNPUBLISHED DRAWING CREATED BY P.S.C.O. IT IS SUBMITTED FOR YOUR PERSONAL USE IN CONJUNCTION WITH A PROJECT BEING PLANNED FOR YOU BY P.S.C.O. IT IS NOT TO BE SHOWN TO ANYONE OUTSIDE YOUR ORGANIZATION NOR IS IT TO BE USED, COPIED, REPRODUCED, OR EXHIBITED IN ANY FASHION.

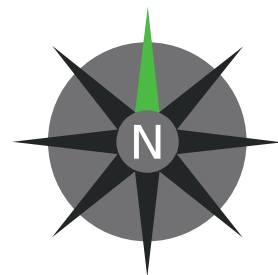
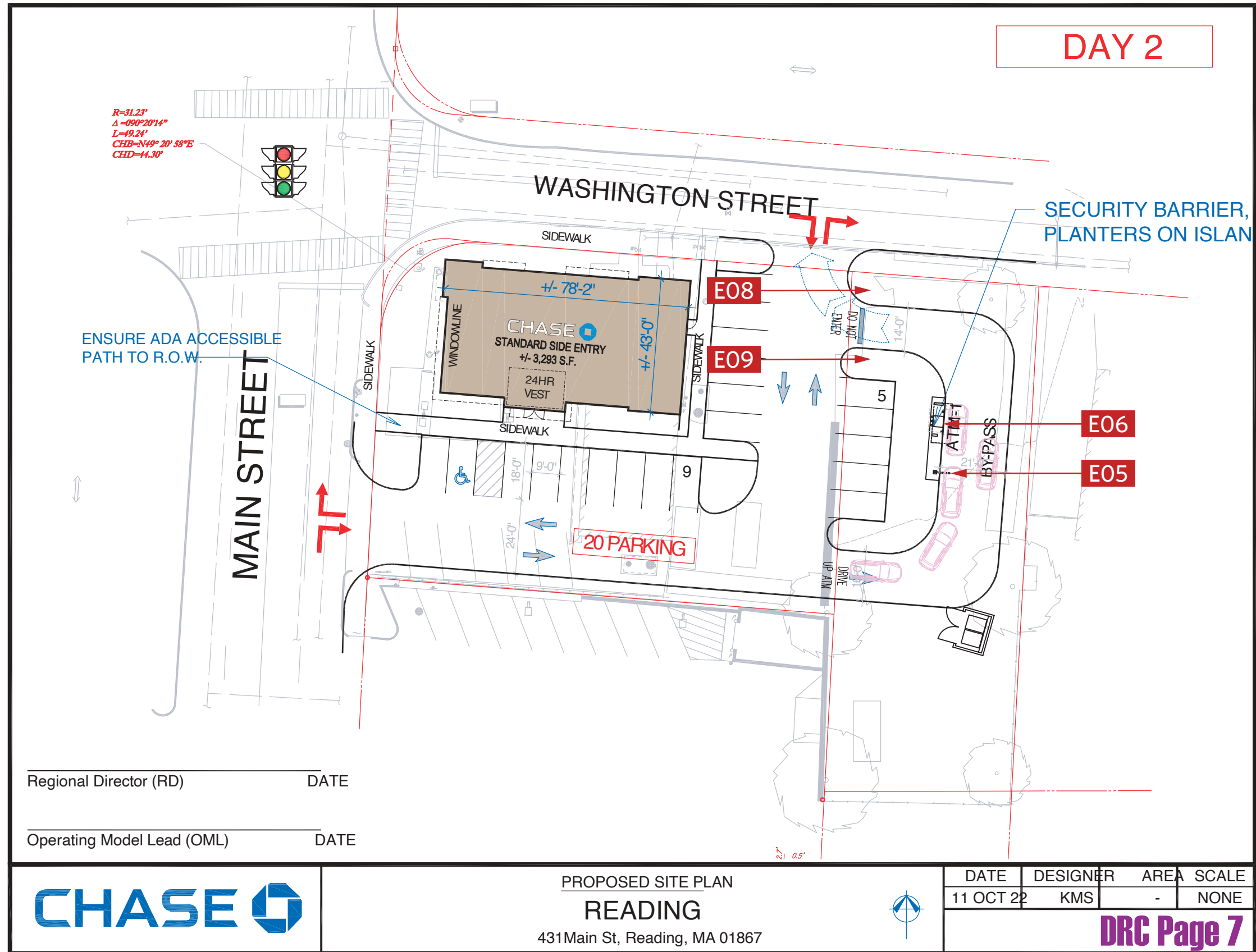
**DRC Page 3**



# Site Plan

## Exterior Scope of Work - DAY 2

|     |                  |   |       |
|-----|------------------|---|-------|
| E05 | HB-U             | HEADACHE BAR  |       |
| E06 | CAN-ATM-SIG-CUST | SIGNATURE DRIVE UP CANOPY - NO CHASE/OCTAGON BRANDING |       |
| E08 | DOT SIGN         | DOUBLE-FACED DO NOT ENTER / STOP DOT SIGN - POLE MNTD | 6.3SF |
| E09 | DOT SIGN         | DOUBLE-FACED DO NOT ENTER / STOP DOT SIGN - POLE MNTD | 6.3SF |



- Exterior Signs
- Interior Signs



**CHS.NB.1160 - Reading**  
431 Main Street  
Reading, MA 01867

**DESIGNER - JM**  
**CREATED - 09.24.22**  
**DRAWING - B102357**

**PHILADELPHIASIGN**  
BRINGING THE WORLD'S BRANDS TO LIFE

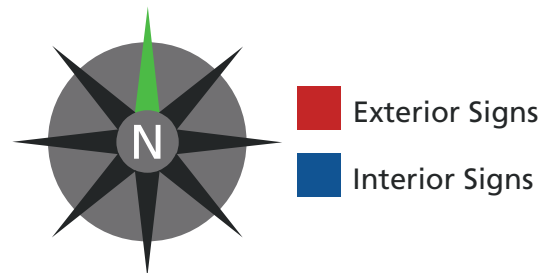
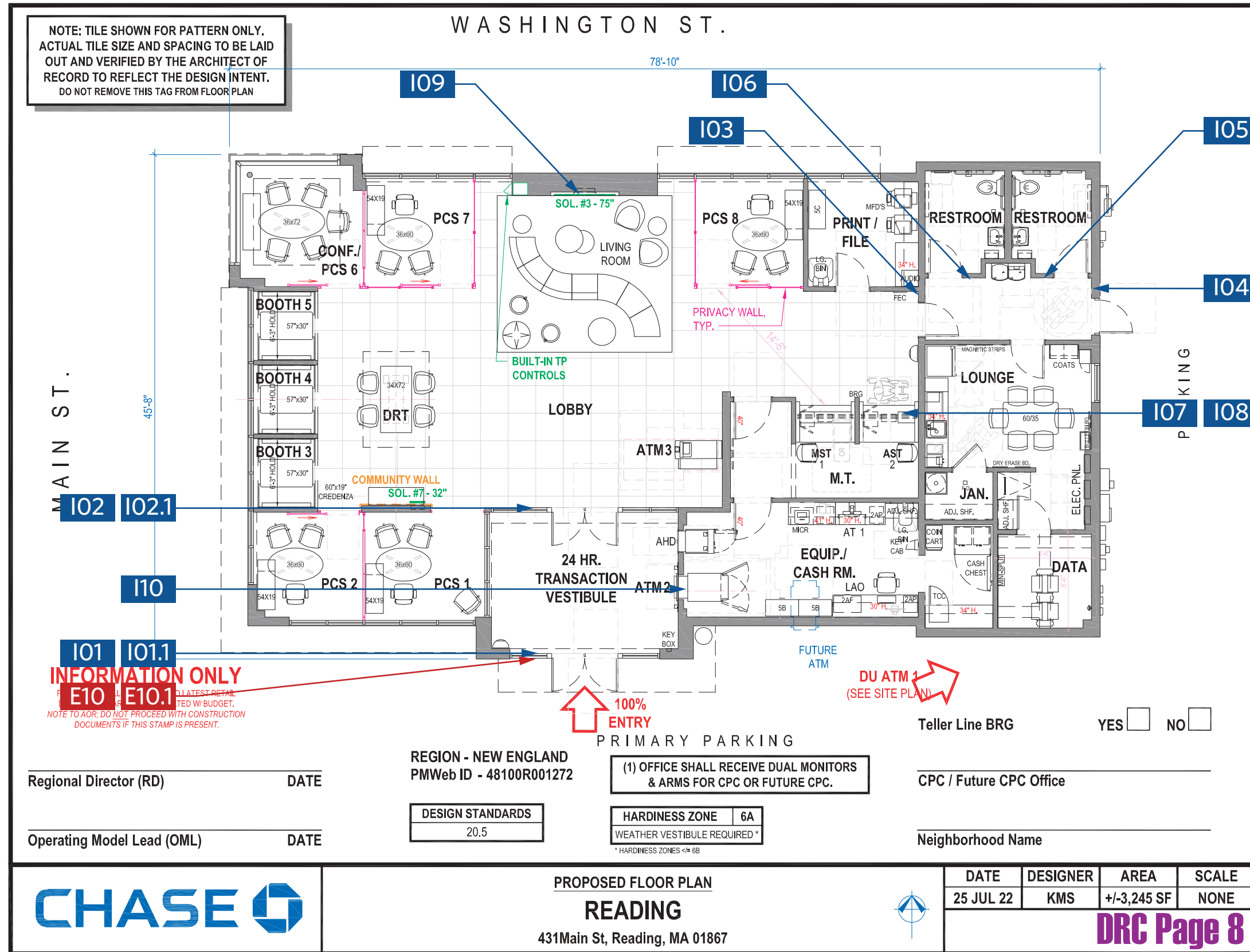
707 WEST SPRING GARDEN ST • PALMYRA, NJ • 08065  
P: 856-829-1460 • F: 856-829-8549 • WEB: <http://www.philadelphiasign.com>

THIS IS AN ORIGINAL UNPUBLISHED DRAWING CREATED BY P.S.C.O. IT IS SUBMITTED FOR YOUR PERSONAL USE IN CONJUNCTION WITH A PROJECT BEING PLANNED FOR YOU BY P.S.C.O. IT IS NOT TO BE SHOWN TO ANYONE OUTSIDE YOUR ORGANIZATION NOR IS IT TO BE USED, COPIED, REPRODUCED, OR EXHIBITED IN ANY FASHION.

# Floor Plan

## Interior Scope of Work

|       |                |  |       |
|-------|----------------|--|-------|
| I01   | ADA-EX         | ADA HANDICAPPED EXIT PLAQUE                        | .25SF |
| I01.1 | CUST-VIN       | MATCHING BRONZE VINYL BACKER                       |       |
| I02   | ADA-EX         | ADA HANDICAPPED EXIT PLAQUE                        | .25SF |
| I02.1 | CUST-VIN       | MATCHING BRONZE VINYL BACKER                       |       |
| I03   | ADA-RI-X       | ADA EMERGENCY EXIT PLAQUE                          | .22SF |
| I04   | ADA-RI-X       | ADA EMERGENCY EXIT PLAQUE                          | .22SF |
| I05   | ADA-RRAG-A-G   | ADA ALL GENDER RESTROOM SIGN - ACCESSIBLE          | 1.4SF |
| I06   | ADA-RRAG-A-G   | ADA ALL GENDER RESTROOM SIGN - ACCESSIBLE          | 1.4SF |
| I07   | ADA-TW         | ADA TELLER WALL SIGN                               | .1SF  |
| I08   | ADA-TW-ALS     | ADA TELLER WINDOW - ASSISTIVE LISTENING SYSTEM     | .1SF  |
| I09   | TPL-BTR-B-24   | 24" THIN PROFILE ILLUMINATED INTERIOR BLUE OCTAGON | 4SF   |
| I10   | SUR-TTW-U-4-TP | ILLUMINATED THIN PROFILE ATM SURROUND              | 33SF  |
| E10   | ADA-EP         | ADA HANDICAPPED ENTRANCE PLAQUE                    | .25SF |
| E10.1 | CUST-VIN       | MATCHING BLUE VINYL BACKER                         |       |



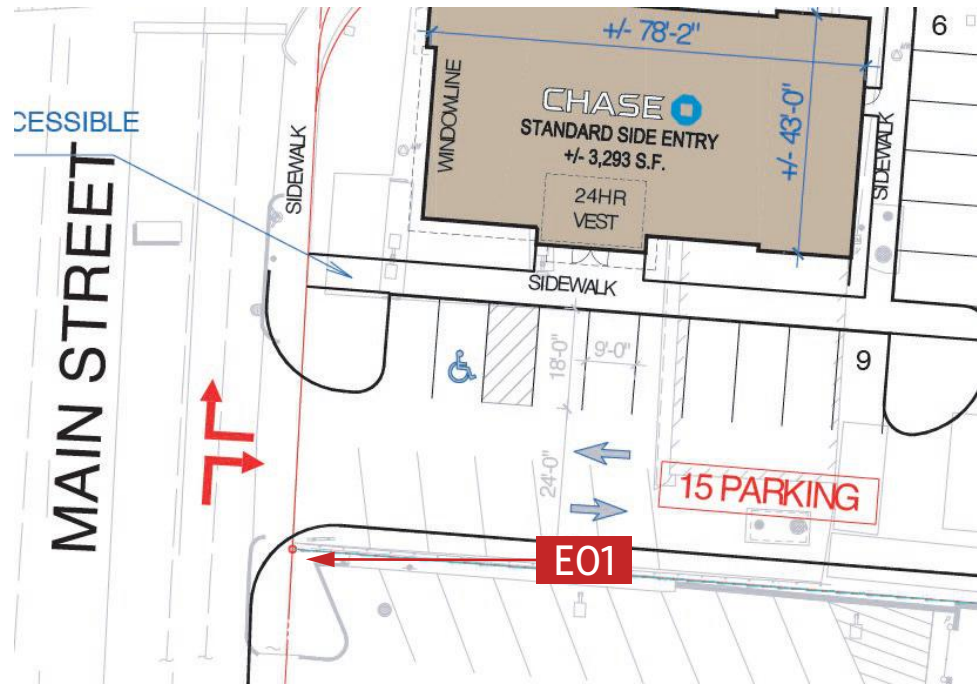
CHS.NB.1160 - Reading  
 431 Main Street  
 Reading, MA 01867

DESIGNER - JM  
 CREATED - 09.24.22  
 DRAWING - B102357

**PHILADELPHIASIGN**  
 BRINGING THE WORLD'S BRANDS TO LIFE  
 707 WEST SPRING GARDEN ST • PALMYRA, NJ • 08065  
 P: 856-829-1460 • F: 856-829-8549 • WEB: http://www.philadelphiasign.com

THIS IS AN ORIGINAL UNPUBLISHED DRAWING CREATED BY P.S.C.O. IT IS SUBMITTED FOR YOUR PERSONAL USE IN CONJUNCTION WITH A PROJECT BEING PLANNED FOR YOU BY P.S.C.O. IT IS NOT TO BE SHOWN TO ANYONE OUTSIDE YOUR ORGANIZATION NOR IS IT TO BE USED, COPIED, REPRODUCED, OR EXHIBITED IN ANY FASHION.

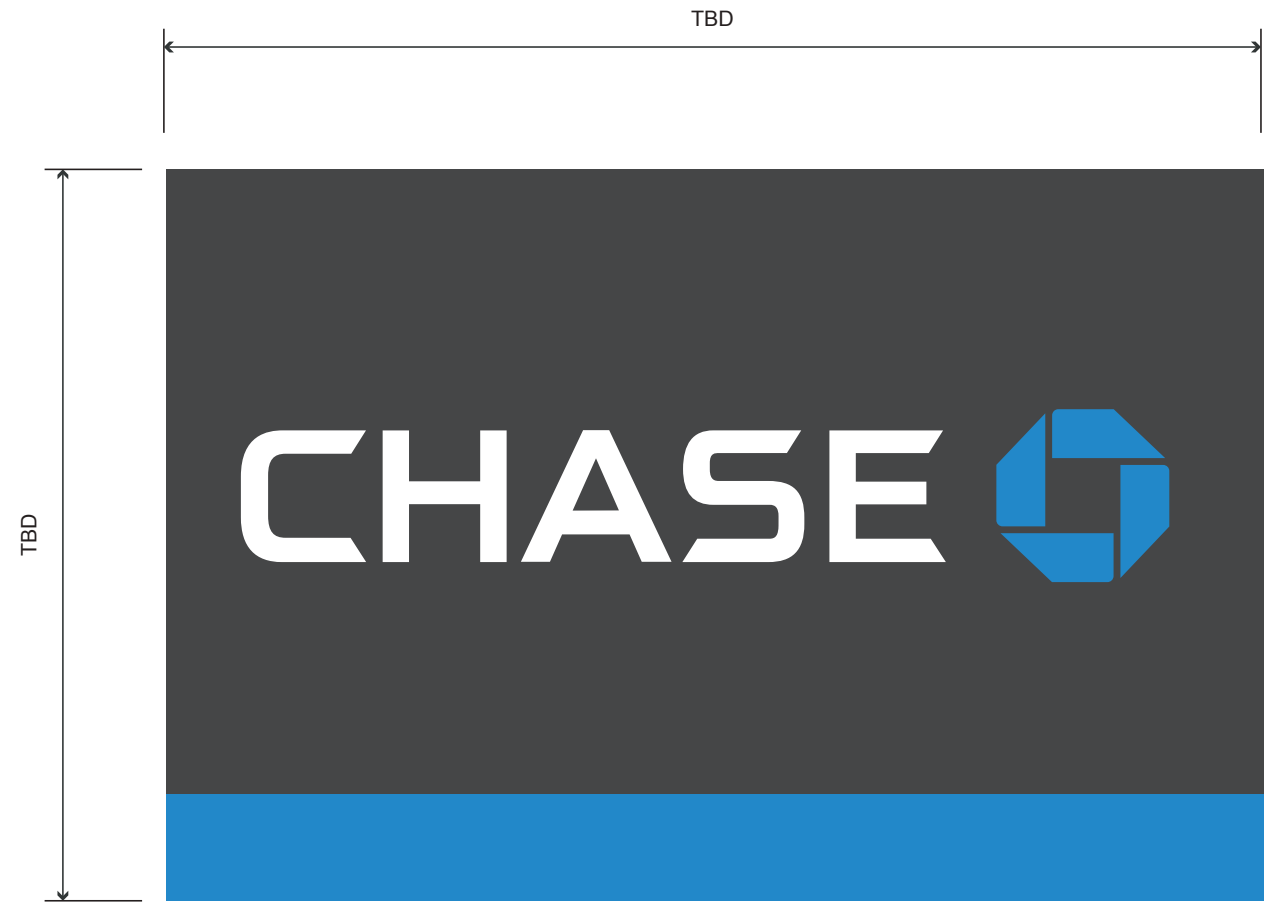
**ADDITIONAL APPROVAL REQUIRED**



Close-Up View



Rendering



**HP-CUST-PYLON-HEAD**  
**CUSTOM DOUBLE-FACED ILLUM PYLON HEAD W/ ROUTED ALUM FACE & PUSH THRU COPY**  
 SCALE: NTS



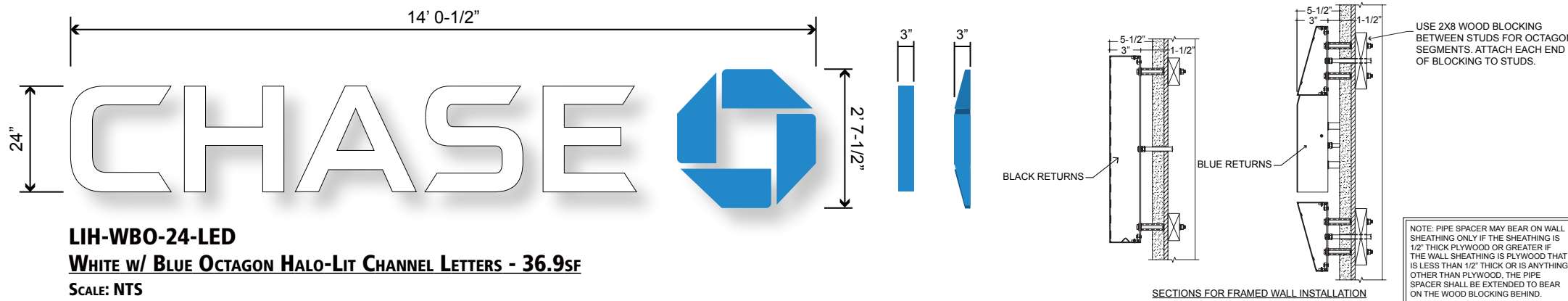
**CHS.NB.1160 - Reading**  
 431 Main Street  
 Reading, MA 01867

**DESIGNER - JM**  
**CREATED - 09.24.22**  
**DRAWING - B102357**

**PHILADELPHIASIGN**  
 BRINGING THE WORLD'S BRANDS TO LIFE  
 707 WEST SPRING GARDEN ST • PALMYRA, NJ • 08065  
 P: 856-829-1460 • F: 856-829-8549 • WEB: <http://www.philadelphiasign.com>

THIS IS AN ORIGINAL UNPUBLISHED DRAWING CREATED BY P.S.C.O. IT IS SUBMITTED FOR YOUR PERSONAL USE IN CONJUNCTION WITH A PROJECT BEING PLANNED FOR YOU BY P.S.C.O. IT IS NOT TO BE SHOWN TO ANYONE OUTSIDE YOUR ORGANIZATION NOR IS IT TO BE USED, COPIED, REPRODUCED, OR EXHIBITED IN ANY FASHION.





For Reference Only  
**CHS.PP\_RW\_24LTR**  
**RACEWAY FOR 24" LETTERSET INSTALLED BEHIND THE PARAPET**  
 SCALE: NTS



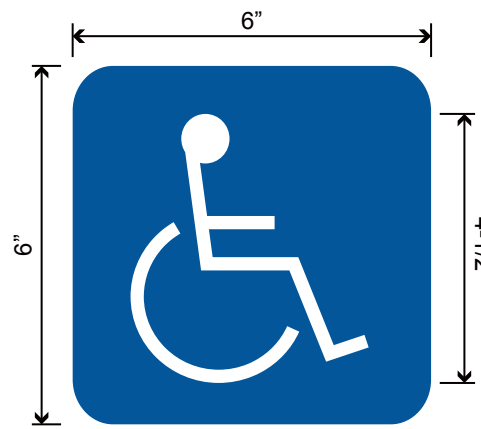
**CHS.NB.1160 - Reading**  
 431 Main Street  
 Reading, MA 01867

**DESIGNER - JM**  
**CREATED - 09.24.22**  
**DRAWING - B102357**

**PHILADELPHIASIGN**  
 BRINGING THE WORLD'S BRANDS TO LIFE  
 707 WEST SPRING GARDEN ST • PALMYRA, NJ • 08065  
 P: 856-829-1460 • F: 856-829-8549 • WEB: <http://www.philadelphiasign.com>

THIS IS AN ORIGINAL UNPUBLISHED DRAWING CREATED BY P.S.C.O. IT IS SUBMITTED FOR YOUR PERSONAL USE IN CONJUNCTION WITH A PROJECT BEING PLANNED FOR YOU BY P.S.C.O. IT IS NOT TO BE SHOWN TO ANYONE OUTSIDE YOUR ORGANIZATION NOR IS IT TO BE USED, COPIED, REPRODUCED, OR EXHIBITED IN ANY FASHION.





**ADA-EP**  
**HANDICAPPED ENTRANCE PLAQUE**  
 SCALE: NTS

**CUST-VIN**  
**MATCHING BLUE VINYL BACKER**  
 SCALE: NTS



**SIGN E10 MOUNTS  
 BACK-TO-BACK WITH  
 SIGN I01.**

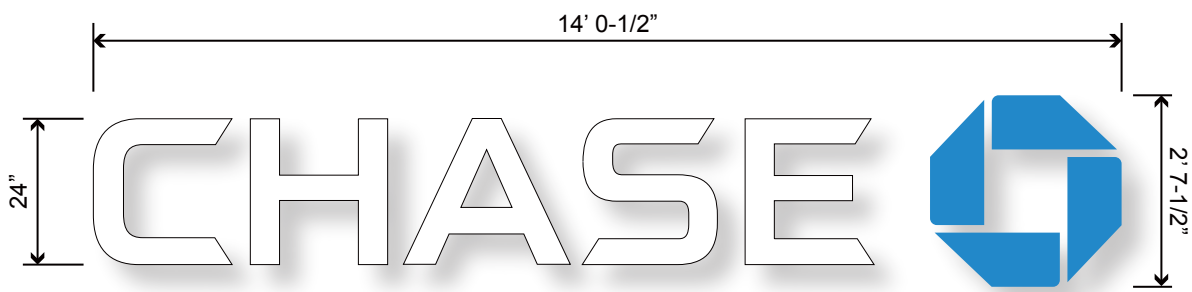


**CHS.NB.1160 - Reading**  
 431 Main Street  
 Reading, MA 01867

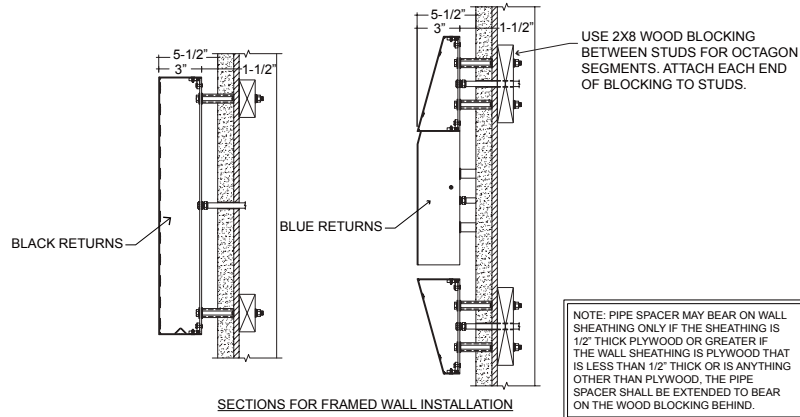
**DESIGNER - JM**  
**CREATED - 09.24.22**  
**DRAWING - B102357**

**PHILADELPHIASIGN**  
 BRINGING THE WORLD'S BRANDS TO LIFE  
 707 WEST SPRING GARDEN ST • PALMYRA, NJ • 08065  
 P: 856-829-1460 • F: 856-829-8549 • WEB: <http://www.philadelphiasign.com>

THIS IS AN ORIGINAL UNPUBLISHED DRAWING CREATED BY P.S.C.O. IT IS SUBMITTED FOR YOUR PERSONAL USE IN CONJUNCTION WITH A PROJECT BEING PLANNED FOR YOU BY P.S.C.O. IT IS NOT TO BE SHOWN TO ANYONE OUTSIDE YOUR ORGANIZATION NOR IS IT TO BE USED, COPIED, REPRODUCED, OR EXHIBITED IN ANY FASHION.



**LIH-WBO-24-LED**  
**White w/ Blue Octagon Halo-Lit Channel Letters - 36.9sf**  
 Scale: NTS



For Reference Only  
**CHS.PP\_RW\_24LTR**  
**RACEWAY FOR 24" LETTERSET INSTALLED BEHIND THE PARAPET**  
 Scale: NTS



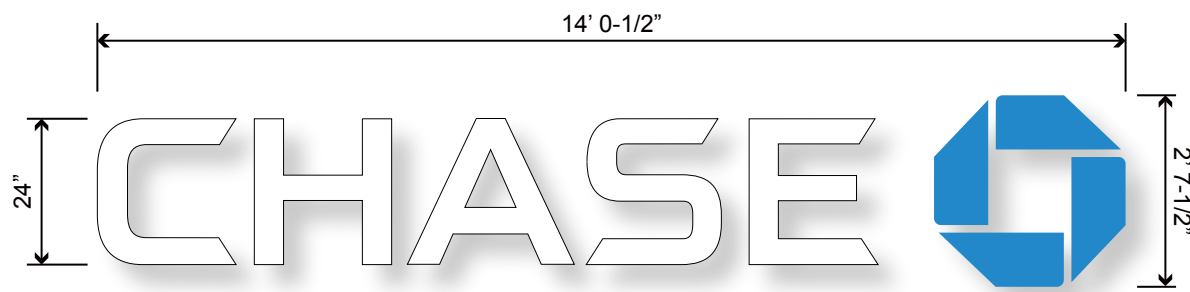
**CHS.NB.1160 - Reading**  
 431 Main Street  
 Reading, MA 01867

**DESIGNER - JM**  
**CREATED - 09.24.22**  
**DRAWING - B102357**

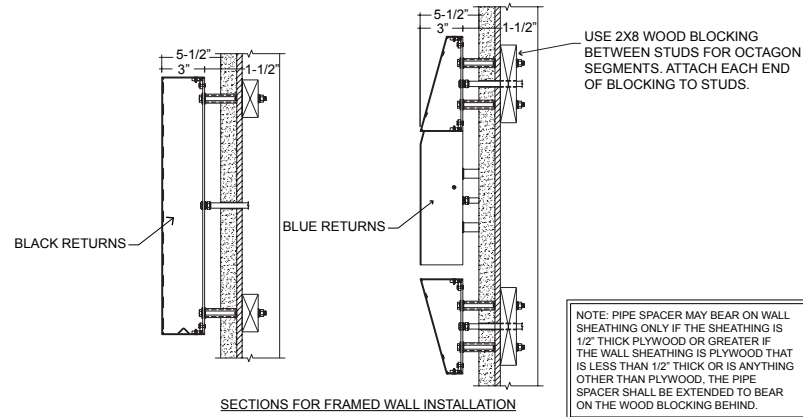
**PHILADELPHIASIGN**  
 BRINGING THE WORLD'S BRANDS TO LIFE  
 707 WEST SPRING GARDEN ST • PALMYRA, NJ • 08065  
 P: 856-829-1460 • F: 856-829-8549 • WEB: <http://www.philadelphiasign.com>

THIS IS AN ORIGINAL UNPUBLISHED DRAWING CREATED BY P.S.C.O. IT IS SUBMITTED FOR YOUR PERSONAL USE IN CONJUNCTION WITH A PROJECT BEING PLANNED FOR YOU BY P.S.C.O. IT IS NOT TO BE SHOWN TO ANYONE OUTSIDE YOUR ORGANIZATION NOR IS IT TO BE USED, COPIED, REPRODUCED, OR EXHIBITED IN ANY FASHION.

**ADDITIONAL APPROVAL REQUIRED**



**LIH-WBO-24-LED**  
**WHITE W/ BLUE OCTAGON HALO-LIT CHANNEL LETTERS - 36.9SF**  
 SCALE: NTS



For Reference Only  
**CHS.PP\_RW\_24LTR**  
**RACEWAY FOR 24" LETTERSET INSTALLED BEHIND THE PARAPET**  
 SCALE: NTS



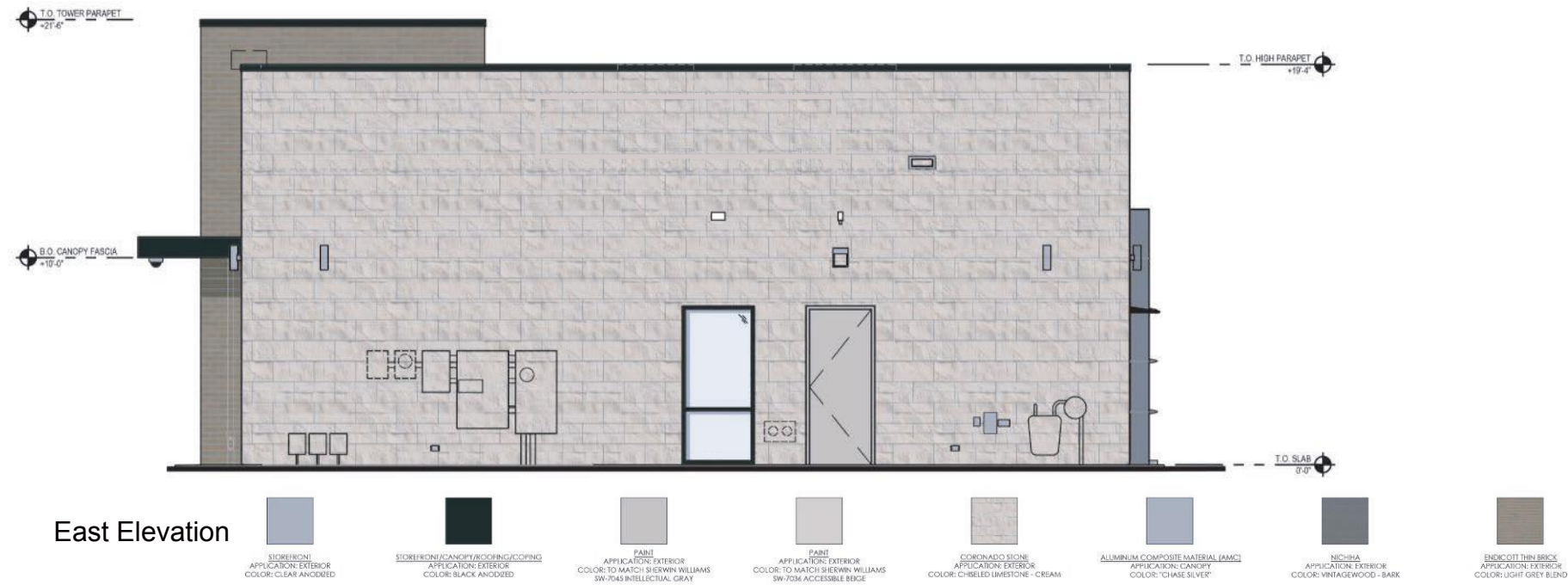
**CHS.NB.1160 - Reading**  
 431 Main Street  
 Reading, MA 01867

**DESIGNER - JM**  
**CREATED - 09.24.22**  
**DRAWING - B102357**

**PHILADELPHIASIGN**  
 BRINGING THE WORLD'S BRANDS TO LIFE  
 707 WEST SPRING GARDEN ST • PALMYRA, NJ • 08065  
 P: 856-829-1460 • F: 856-829-8549 • WEB: <http://www.philadelphiasign.com>

THIS IS AN ORIGINAL UNPUBLISHED DRAWING CREATED BY P.S.C.O. IT IS SUBMITTED FOR YOUR PERSONAL USE IN CONJUNCTION WITH A PROJECT BEING PLANNED FOR YOU BY P.S.C.O. IT IS NOT TO BE SHOWN TO ANYONE OUTSIDE YOUR ORGANIZATION NOR IS IT TO BE USED, COPIED, REPRODUCED, OR EXHIBITED IN ANY FASHION.



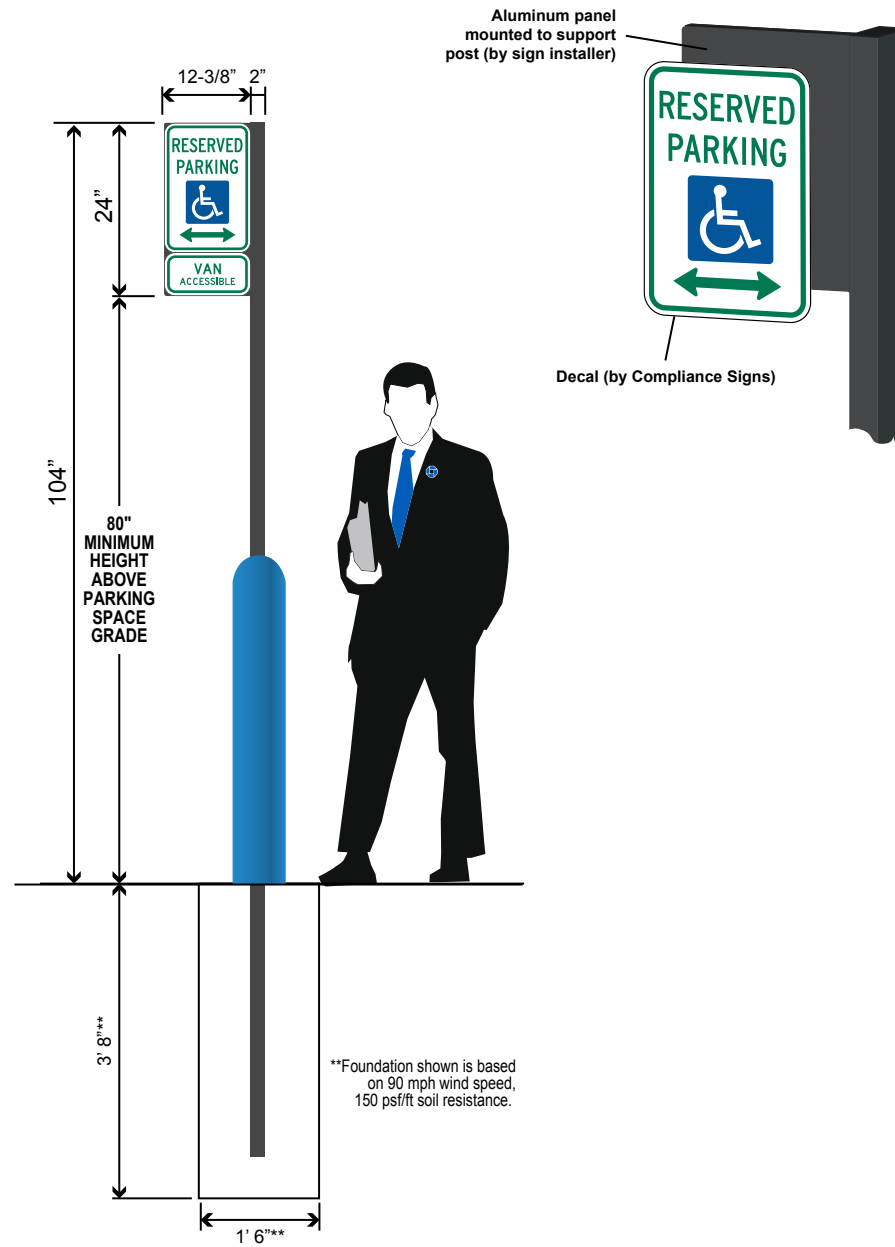


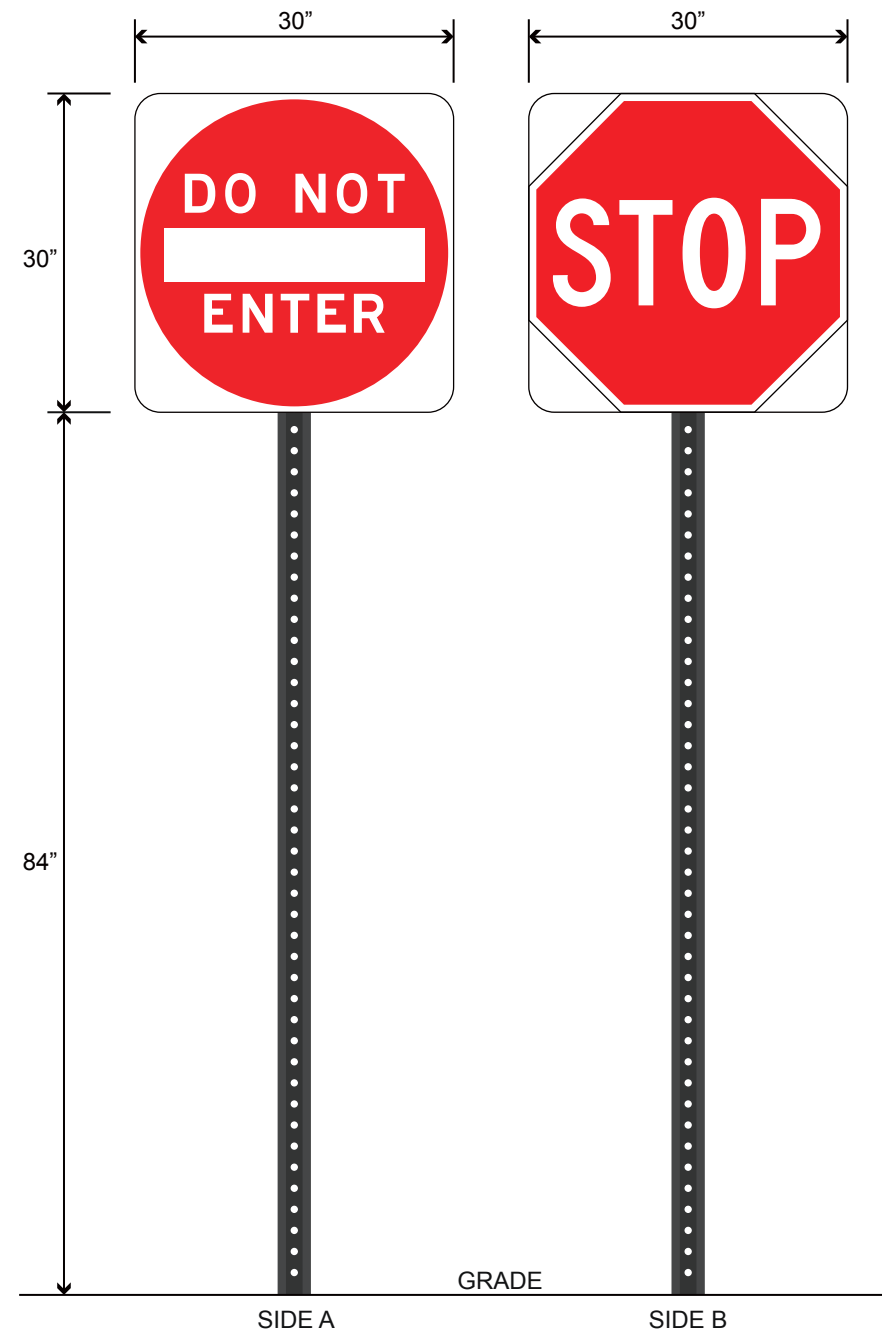
# NO SIGNAGE



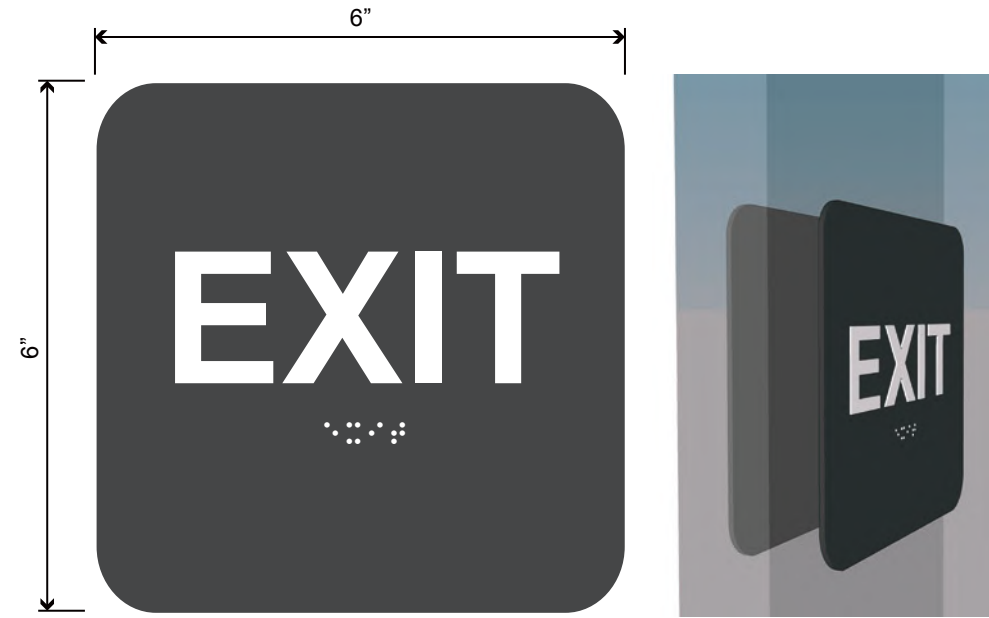


**TC-P-ADA-V-RE-MA**  
**POLE MOUNTED ADA PARKING REGULATORY**  
**SIGN W/ VAN ACCESS (RE-ENGINEERED)**  
 SCALE: NTS  
**NOTE: BOLLARD BY G.C.**





**DOT SIGN**  
**DOUBLE-FACED DO NOT ENTER / STOP DOT SIGN - POLE MOUNTED**  
SCALE: NTS



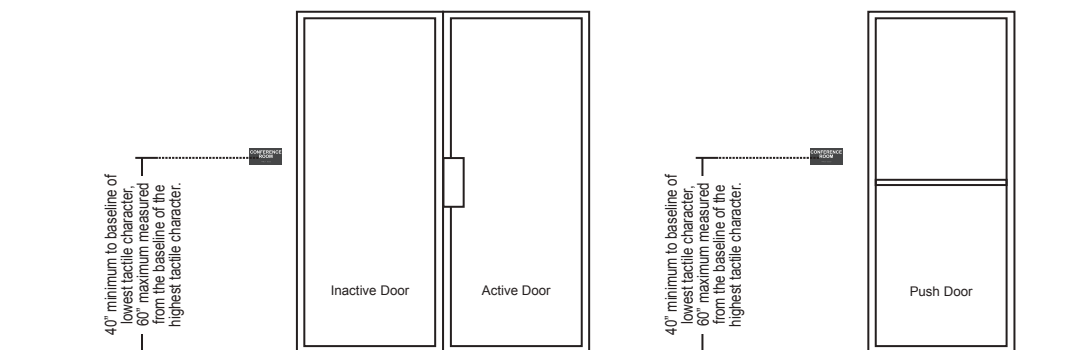
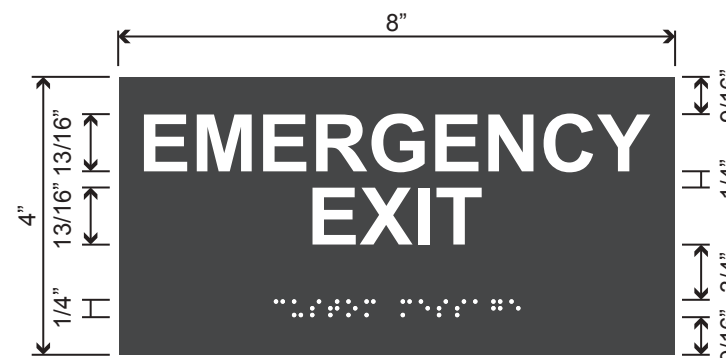
**ADA-EX**  
**HANDICAPPED EXIT PLAQUE**  
 SCALE: NTS

**SIGN I01 MOUNTS  
 BACK-TO-BACK WITH  
 SIGN E10.**

**CUST-VIN**  
**MATCHING BRONZE VINYL BACKER**  
 SCALE: NTS

**ADA-RI-X** Permanent Room ID Signage

- Signs identifying a permanent room or space must be mounted on the wall, next to the door, on the latch side of the door.
- Acrylic tactile signs designed to meet Federal ADA 2010 ADAAG standards.



## Project Details

Project Name: Reading R001272

Branch Name:

Document Name: 20221006\_Reading\_Brand Book\_DRC PENDING.pdf

DRC Date: 10/10/2022

OVP#: 48100R001272

Program: New Build Program

ATM - Offline  
AV Technology – Offline  
BBI - Offline  
BIR or BIR Plus - Offline  
EV Charging  
Large Cap Retrofit  
Merch Only – Offline  
NB - Regular or Expansion  
Path  
Path of Travel - Offline  
Relocations  
Retrofit - BAU - Offline  
Retrofit - Community - Offline  
Retrofit - Companion - Offline  
RSU  
Signage - Offline  
Solar Carports  
USWM Office Add - Offline

Project Program:

Project Type: New Build Signage/Elevation

Designer: Kanishka Moham Salehi

Status: Approved w/ Edits

DND#: 0

Region:

Market:

Address:

City:

State:

Zip:

| Comment   | By                  | On               |
|---|---------------------|------------------|
| Approved - Rick Dube  | Ashlee Jo Kelly     | 10/11/2022       |
| Please confirm no additional approval is required to re-use the existing pylon sign. Approved with edits - Judi Dominey | Tiffany Anne McLeod | 10/10/2022       |
| 10/6/22 - AV approved   | Brion L Stottsberry | 10/6/2022        |
| Approver  | Approval Status     | Responded        |
| Ashlee Jo Kelly   | Approved            | 10/11/2022 09:19 |
| Brad R Cothorn  | Approved            | 10/10/2022 15:05 |
| Christopher C Thiel   | Approved            | 10/06/2022 17:02 |
| Tiffany Anne McLeod   | Approved w/ Edits   | 10/10/2022 14:35 |



CHS.NB.1160

READING

431 Main Street  
Reading, MA 01867



**REVISION NOTES:**

10.17.22 JM Updated Site Plans, Creating Day 2 Installations.



B102357



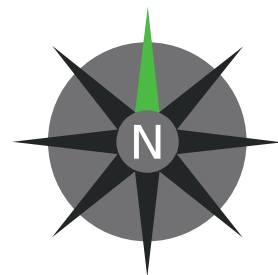
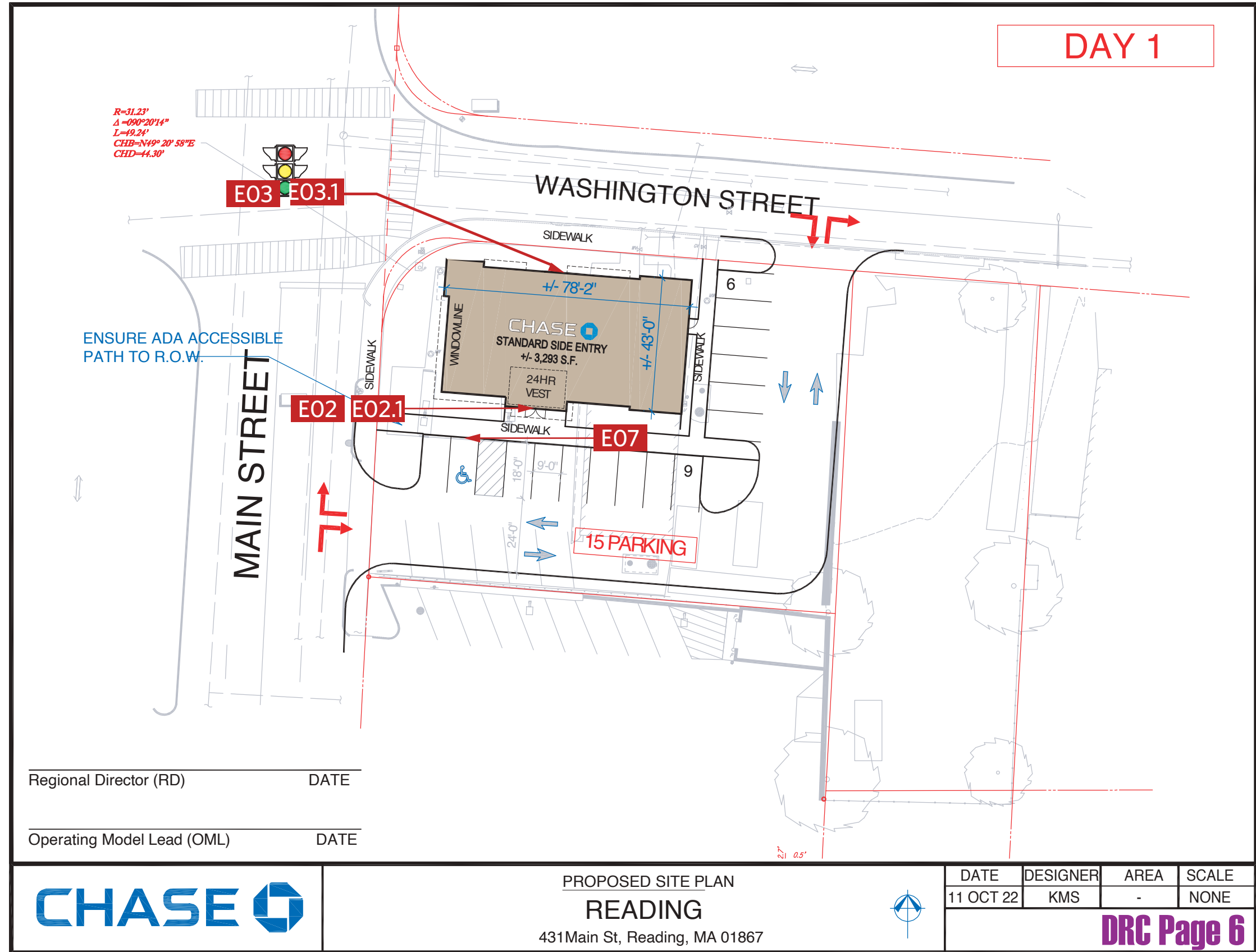




# Site Plan

## Exterior Scope of Work - DAY 1

|       |                  |  |        |
|-------|------------------|--|--------|
| E02   | LIH-WBO-24-LED   | WHITE W/ BLUE OCTAGON HALO-LIT CHANNEL LETTERS               | 36.9SF |
| E02.1 | CHS.PP_RE_24LTR  | RACEWAY FOR 24" LETTERSET TO BE INSTALLED BEHIND THE PARAPET | TBD    |
| E03   | LIH-WBO-24-LED   | WHITE W/ BLUE OCTAGON HALO-LIT CHANNEL LETTERS               | 36.9SF |
| E03.1 | CHS.PP_RE_24LTR  | RACEWAY FOR 24" LETTERSET TO BE INSTALLED BEHIND THE PARAPET | TBD    |
| E07   | TC-P-ADA-V-RE-MA | POLE MOUNTED ADA PARKING REGULATORY SIGN W/ VAN ACCESS       | 2SF    |
| E11   | CSS-FS           | "COMING SOON" FENCE MOUNTED SIGN                             | 60SF   |



- Exterior Signs
- Interior Signs



**CHS.NB.1160 - Reading**  
431 Main Street  
Reading, MA 01867

**DESIGNER** - JM  
**CREATED** - 09.24.22  
**DRAWING** - B102357

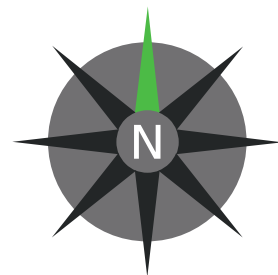
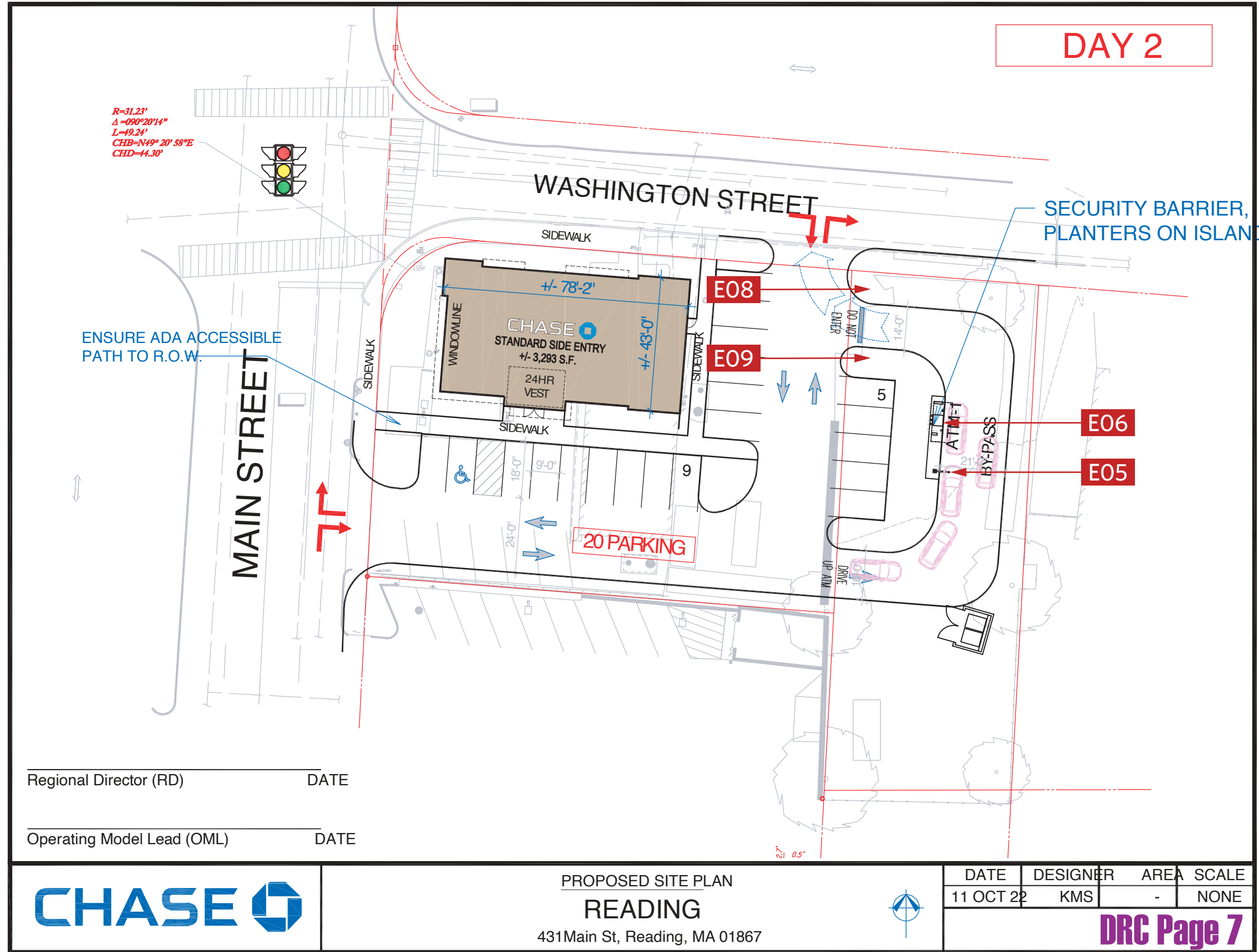
**PHILADELPHIASIGN**  
BRINGING THE WORLD'S BRANDS TO LIFE  
707 WEST SPRING GARDEN ST • PALMYRA, NJ • 08065  
P: 856-829-1460 • F: 856-829-8549 • WEB: <http://www.philadelphiasign.com>

THIS IS AN ORIGINAL UNPUBLISHED DRAWING CREATED BY P.S.C.O. IT IS SUBMITTED FOR YOUR PERSONAL USE IN CONJUNCTION WITH A PROJECT BEING PLANNED FOR YOU BY P.S.C.O. IT IS NOT TO BE SHOWN TO ANYONE OUTSIDE YOUR ORGANIZATION NOR IS IT TO BE USED, COPIED, REPRODUCED, OR EXHIBITED IN ANY FASHION.

# Site Plan

## Exterior Scope of Work - DAY 2

|     |                  |   |       |
|-----|------------------|---|-------|
| E05 | HB-U             | HEADACHE BAR  |       |
| E06 | CAN-ATM-SIG-CUST | SIGNATURE DRIVE UP CANOPY - NO CHASE/OCTAGON BRANDING |       |
| E08 | DOT SIGN         | DOUBLE-FACED DO NOT ENTER / STOP DOT SIGN - POLE MNTD | 6.3SF |
| E09 | DOT SIGN         | DOUBLE-FACED DO NOT ENTER / STOP DOT SIGN - POLE MNTD | 6.3SF |



- Exterior Signs
- Interior Signs



**CHS.NB.1160 - Reading**  
431 Main Street  
Reading, MA 01867

**DESIGNER - JM**  
**CREATED - 09.24.22**  
**DRAWING - B102357**

**PHILADELPHIASIGN**  
BRINGING THE WORLD'S BRANDS TO LIFE  
707 WEST SPRING GARDEN ST • PALMYRA, NJ • 08065  
P: 856-829-1460 • F: 856-829-8549 • WEB: <http://www.philadelphiasign.com>

THIS IS AN ORIGINAL UNPUBLISHED DRAWING CREATED BY P.S.C.O. IT IS SUBMITTED FOR YOUR PERSONAL USE IN CONJUNCTION WITH A PROJECT BEING PLANNED FOR YOU BY P.S.C.O. IT IS NOT TO BE SHOWN TO ANYONE OUTSIDE YOUR ORGANIZATION NOR IS IT TO BE USED, COPIED, REPRODUCED, OR EXHIBITED IN ANY FASHION.



# Site Plan

## Exterior Scope of Work - DAY 1

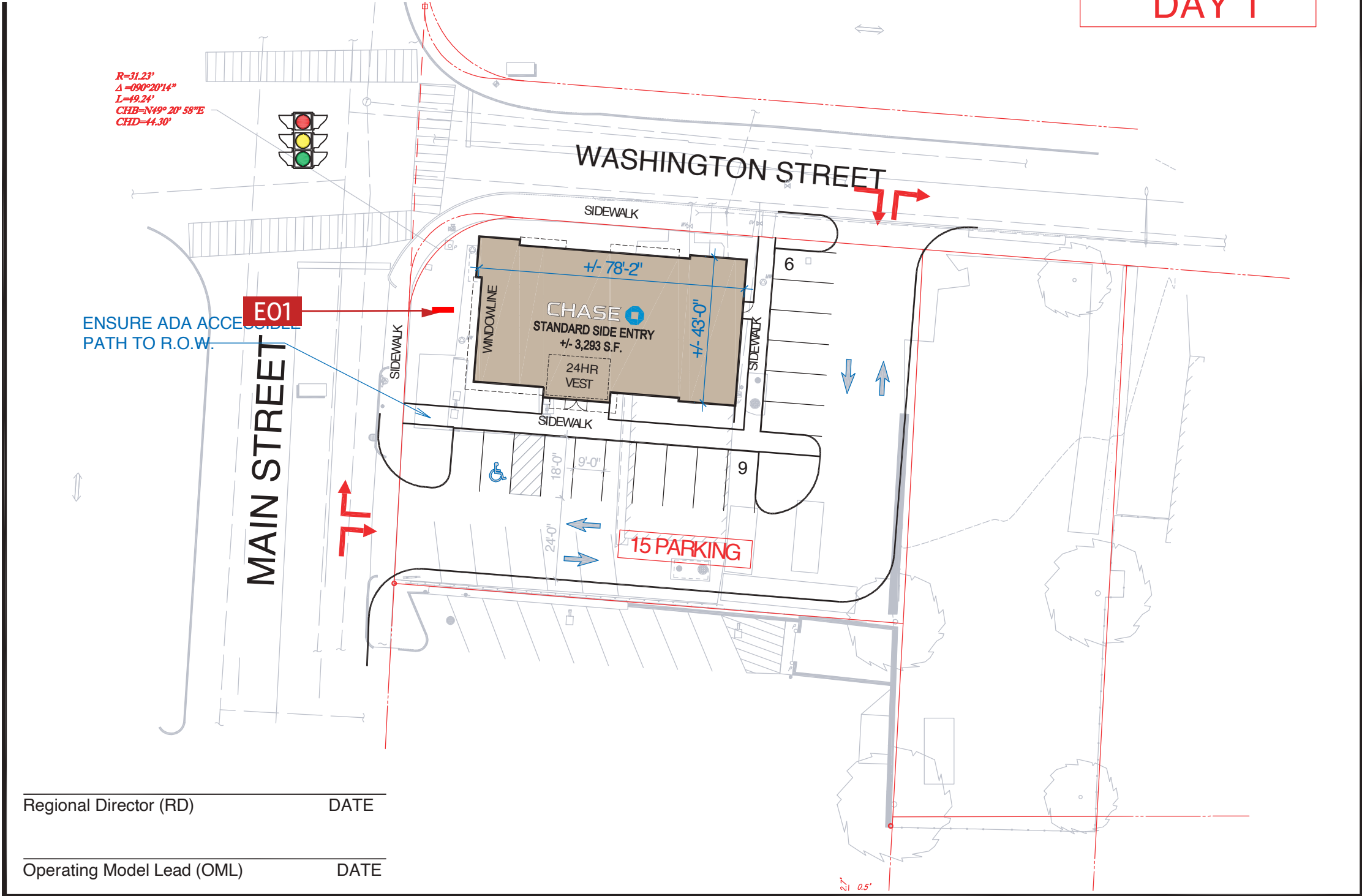
E01 M-12-RE

DOUBLE-FACED ILLUMINATED MONUMENT SIGN

12SF

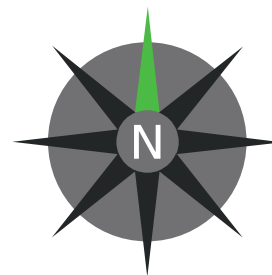
# ADDITIONAL APPROVAL REQUIRED

DAY 1



Regional Director (RD) \_\_\_\_\_ DATE \_\_\_\_\_

Operating Model Lead (OML) \_\_\_\_\_ DATE \_\_\_\_\_



- Exterior Signs
- Interior Signs



PROPOSED SITE PLAN

READING

431 Main St, Reading, MA 01867

| DATE      | DESIGNER | AREA | SCALE |
|-----------|----------|------|-------|
| 11 OCT 22 | KMS      | -    | NONE  |

**DRC Page 6**



CHS.NB.1160 - Reading

431 Main Street  
Reading, MA 01867

DESIGNER - JM

CREATED - 09.24.22

DRAWING - B102357



PHILADELPHIASIGN

BRINGING THE WORLD'S BRANDS TO LIFE

707 WEST SPRING GARDEN ST • PALMYRA, NJ • 08065  
P: 856-829-1460 • F: 856-829-8549 • WEB: <http://www.philadelphiasign.com>

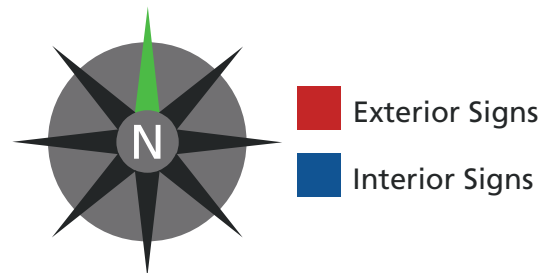
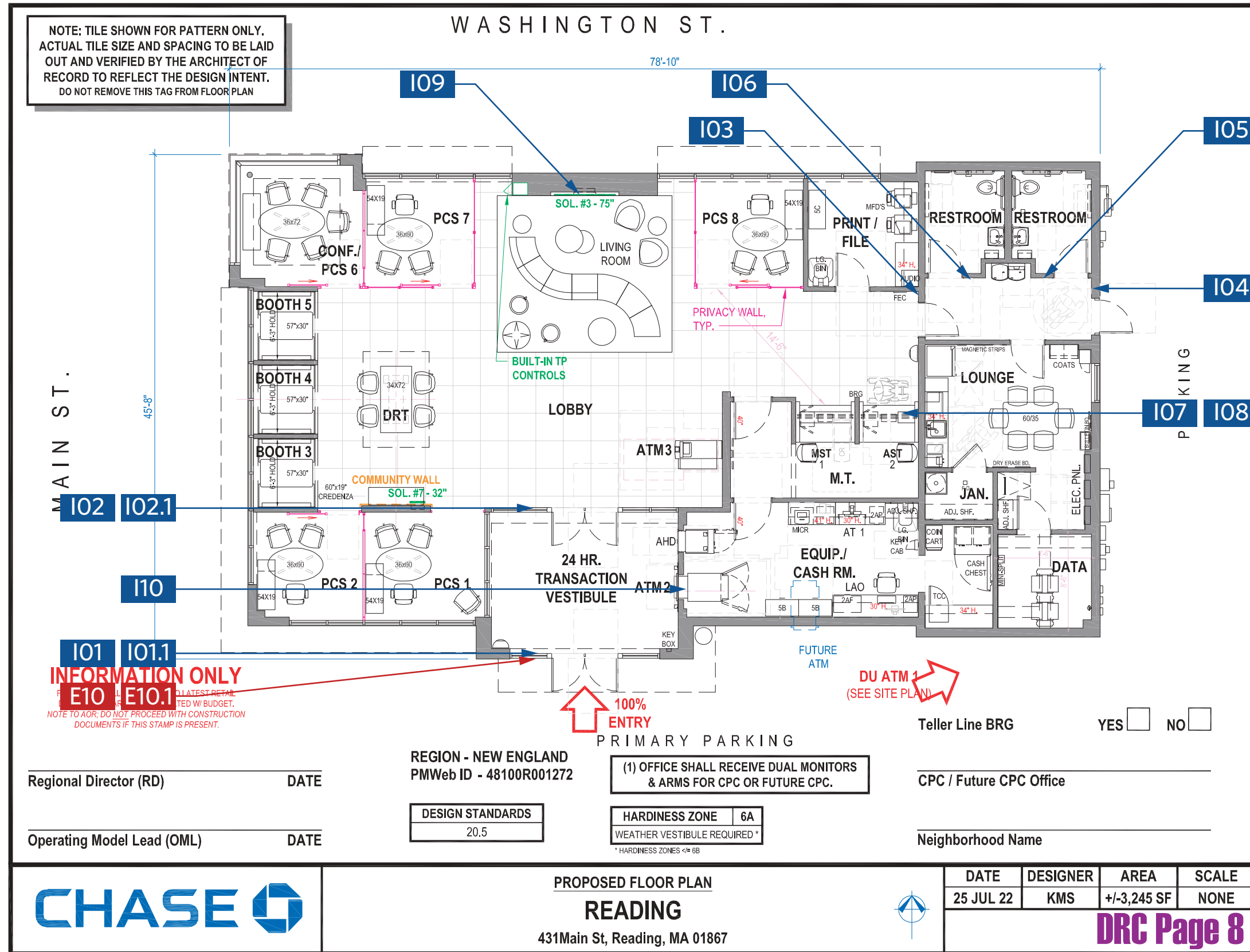
THIS IS AN ORIGINAL UNPUBLISHED DRAWING CREATED BY P.S.C.O. IT IS SUBMITTED FOR YOUR PERSONAL USE IN CONJUNCTION WITH A PROJECT BEING PLANNED FOR YOU BY P.S.C.O. IT IS NOT TO BE SHOWN TO ANYONE OUTSIDE YOUR ORGANIZATION NOR IS IT TO BE USED, COPIED, REPRODUCED, OR EXHIBITED IN ANY FASHION.

**DRC Page 5**

# Floor Plan

## Interior Scope of Work

|       |                |  |       |
|-------|----------------|--|-------|
| I01   | ADA-EX         | ADA HANDICAPPED EXIT PLAQUE                        | .25SF |
| I01.1 | CUST-VIN       | MATCHING BRONZE VINYL BACKER                       |       |
| I02   | ADA-EX         | ADA HANDICAPPED EXIT PLAQUE                        | .25SF |
| I02.1 | CUST-VIN       | MATCHING BRONZE VINYL BACKER                       |       |
| I03   | ADA-RI-X       | ADA EMERGENCY EXIT PLAQUE                          | .22SF |
| I04   | ADA-RI-X       | ADA EMERGENCY EXIT PLAQUE                          | .22SF |
| I05   | ADA-RRAG-A-G   | ADA ALL GENDER RESTROOM SIGN - ACCESSIBLE          | 1.4SF |
| I06   | ADA-RRAG-A-G   | ADA ALL GENDER RESTROOM SIGN - ACCESSIBLE          | 1.4SF |
| I07   | ADA-TW         | ADA TELLER WALL SIGN                               | .1SF  |
| I08   | ADA-TW-ALS     | ADA TELLER WINDOW - ASSISTIVE LISTENING SYSTEM     | .1SF  |
| I09   | TPL-BTR-B-24   | 24" THIN PROFILE ILLUMINATED INTERIOR BLUE OCTAGON | 4SF   |
| I10   | SUR-TTW-U-4-TP | ILLUMINATED THIN PROFILE ATM SURROUND              | 33SF  |
| E10   | ADA-EP         | ADA HANDICAPPED ENTRANCE PLAQUE                    | .25SF |
| E10.1 | CUST-VIN       | MATCHING BLUE VINYL BACKER                         |       |



CHS.NB.1160 - Reading  
431 Main Street  
Reading, MA 01867

DESIGNER - JM  
CREATED - 09.24.22  
DRAWING - B102357

**PHILADELPHIASIGN**  
BRINGING THE WORLD'S BRANDS TO LIFE  
707 WEST SPRING GARDEN ST • PALMYRA, NJ • 08065  
P: 856-829-1460 • F: 856-829-8549 • WEB: http://www.philadelphiasign.com

THIS IS AN ORIGINAL UNPUBLISHED DRAWING CREATED BY P.S.C.O. IT IS SUBMITTED FOR YOUR PERSONAL USE IN CONJUNCTION WITH A PROJECT BEING PLANNED FOR YOU BY P.S.C.O. IT IS NOT TO BE SHOWN TO ANYONE OUTSIDE YOUR ORGANIZATION NOR IS IT TO BE USED, COPIED, REPRODUCED, OR EXHIBITED IN ANY FASHION.

**ADDITIONAL APPROVAL REQUIRED**



**M-12-RE**  
**DOUBLE-FACED ILLUMINATED MONUMENT - 12SF**  
 SCALE: NTS  
 NOTE: Stone Base to Match Building.



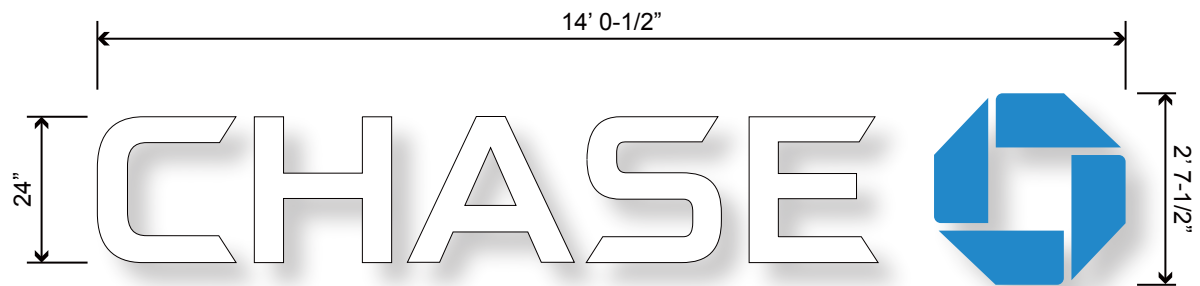
CHS.NB.1160 - Reading  
 431 Main Street  
 Reading, MA 01867

DESIGNER - JM  
 CREATED - 09.24.22  
 DRAWING - B102357

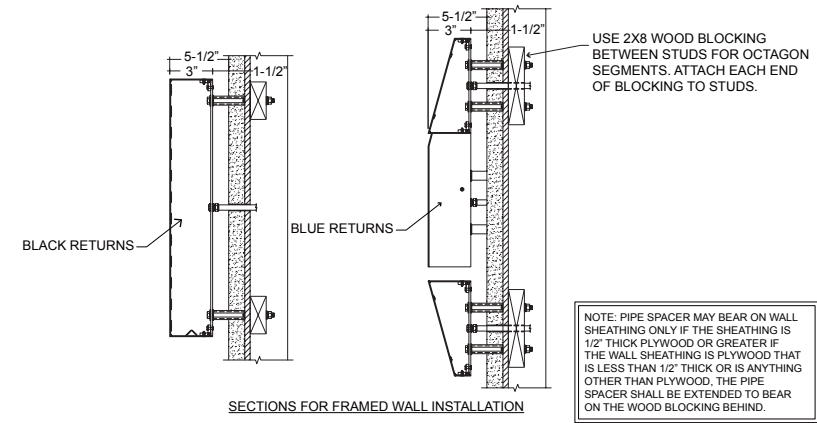
**PHILADELPHIASIGN**  
 BRINGING THE WORLD'S BRANDS TO LIFE  
 707 WEST SPRING GARDEN ST • PALMYRA, NJ • 08065  
 P: 856-829-1460 • F: 856-829-8549 • WEB: <http://www.philadelphiasign.com>

THIS IS AN ORIGINAL UNPUBLISHED DRAWING CREATED BY P.S.C.O. IT IS SUBMITTED FOR YOUR PERSONAL USE IN CONJUNCTION WITH A PROJECT BEING PLANNED FOR YOU BY P.S.C.O. IT IS NOT TO BE SHOWN TO ANYONE OUTSIDE YOUR ORGANIZATION NOR IS IT TO BE USED, COPIED, REPRODUCED, OR EXHIBITED IN ANY FASHION.





**LIH-WBO-24-LED**  
**WHITE W/ BLUE OCTAGON HALO-LIT CHANNEL LETTERS - 36.9SF**  
 SCALE: NTS



For Reference Only  
**CHS.PP\_RW\_24LTR**  
**RACEWAY FOR 24" LETTERSET INSTALLED BEHIND THE PARAPET**  
 SCALE: NTS



**CHS.NB.1160 - Reading**  
 431 Main Street  
 Reading, MA 01867

**DESIGNER - JM**  
**CREATED - 09.24.22**  
**DRAWING - B102357**

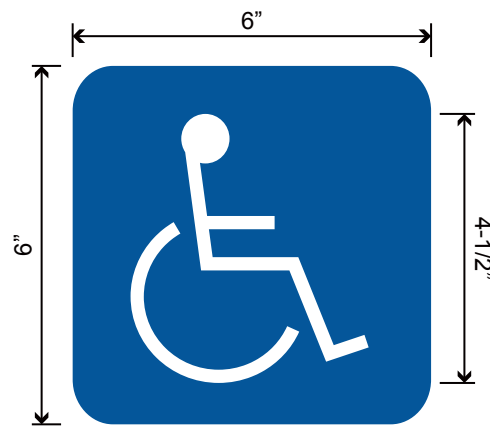
**PHILADELPHIASIGN**  
 BRINGING THE WORLD'S BRANDS TO LIFE  
 707 WEST SPRING GARDEN ST • PALMYRA, NJ • 08065  
 P: 856-829-1460 • F: 856-829-8549 • WEB: <http://www.philadelphiasign.com>

THIS IS AN ORIGINAL UNPUBLISHED DRAWING CREATED BY P.S.C.O. IT IS SUBMITTED FOR YOUR PERSONAL USE IN CONJUNCTION WITH A PROJECT BEING PLANNED FOR YOU BY P.S.C.O. IT IS NOT TO BE SHOWN TO ANYONE OUTSIDE YOUR ORGANIZATION NOR IS IT TO BE USED, COPIED, REPRODUCED, OR EXHIBITED IN ANY FASHION.





South Elevation



**ADA-EP**  
**HANDICAPPED ENTRANCE PLAQUE**  
SCALE: NTS

**CUST-VIN**  
**MATCHING BLUE VINYL BACKER**  
SCALE: NTS



**SIGN E10 MOUNTS  
BACK-TO-BACK WITH  
SIGN I01.**



**CHS.NB.1160 - Reading**  
431 Main Street  
Reading, MA 01867

**DESIGNER - JM**  
**CREATED - 09.24.22**  
**DRAWING - B102357**

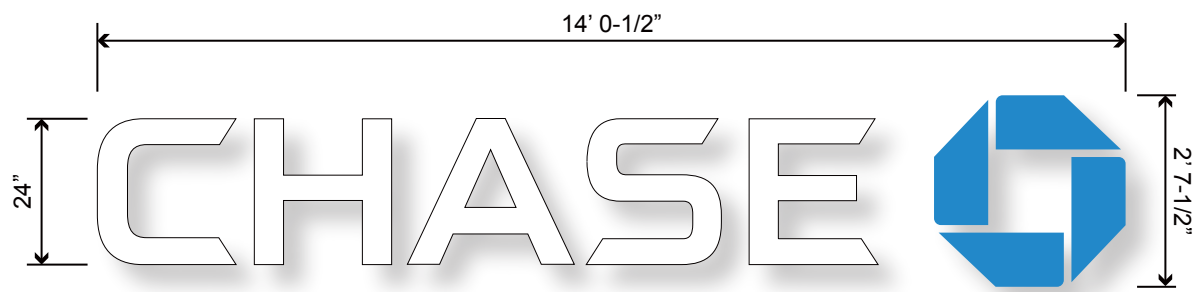
**PHILADELPHIASIGN**  
BRINGING THE WORLD'S BRANDS TO LIFE  
707 WEST SPRING GARDEN ST • PALMYRA, NJ • 08065  
P: 856-829-1460 • F: 856-829-8549 • WEB: <http://www.philadelphiasign.com>

THIS IS AN ORIGINAL UNPUBLISHED DRAWING CREATED BY P.S.C.O. IT IS SUBMITTED FOR YOUR PERSONAL USE IN CONJUNCTION WITH A PROJECT BEING PLANNED FOR YOU BY P.S.C.O. IT IS NOT TO BE SHOWN TO ANYONE OUTSIDE YOUR ORGANIZATION NOR IS IT TO BE USED, COPIED, REPRODUCED, OR EXHIBITED IN ANY FASHION.

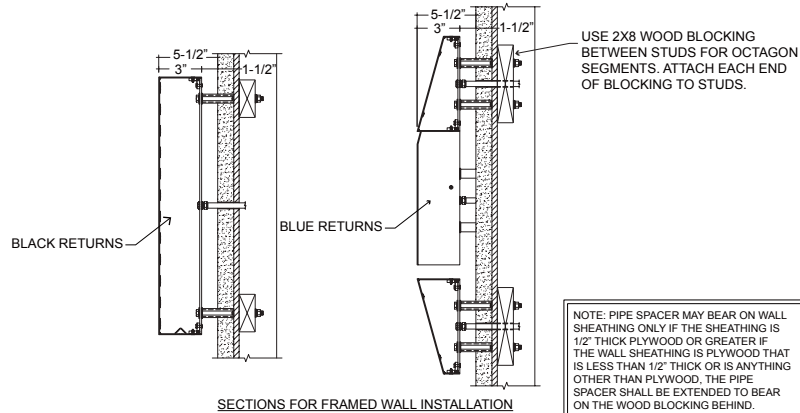


E03 E03.1

North Elevation



**LIH-WBO-24-LED**  
**WHITE W/ BLUE OCTAGON HALO-LIT CHANNEL LETTERS - 36.9SF**  
 SCALE: NTS



For Reference Only  
**CHS.PP\_RW\_24LTR**  
**RACEWAY FOR 24" LETTERSET INSTALLED BEHIND THE PARAPET**  
 SCALE: NTS

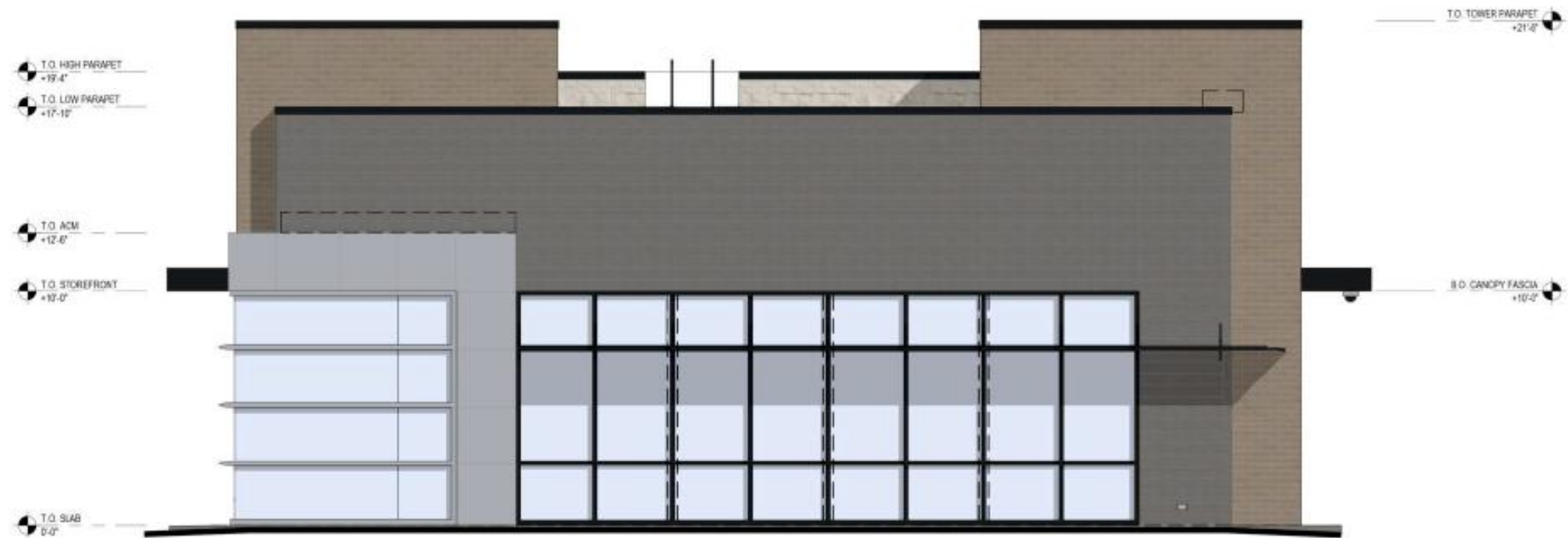


CHS.NB.1160 - Reading  
 431 Main Street  
 Reading, MA 01867

DESIGNER - JM  
 CREATED - 09.24.22  
 DRAWING - B102357

PHILADELPHIASIGN  
 BRINGING THE WORLD'S BRANDS TO LIFE  
 707 WEST SPRING GARDEN ST • PALMYRA, NJ • 08065  
 P: 856-829-1460 • F: 856-829-8549 • WEB: <http://www.philadelphiasign.com>

THIS IS AN ORIGINAL UNPUBLISHED DRAWING CREATED BY P.S.C.O. IT IS SUBMITTED FOR YOUR PERSONAL USE IN CONJUNCTION WITH A PROJECT BEING PLANNED FOR YOU BY P.S.C.O. IT IS NOT TO BE SHOWN TO ANYONE OUTSIDE YOUR ORGANIZATION NOR IS IT TO BE USED, COPIED, REPRODUCED, OR EXHIBITED IN ANY FASHION.



***NO SIGNAGE***



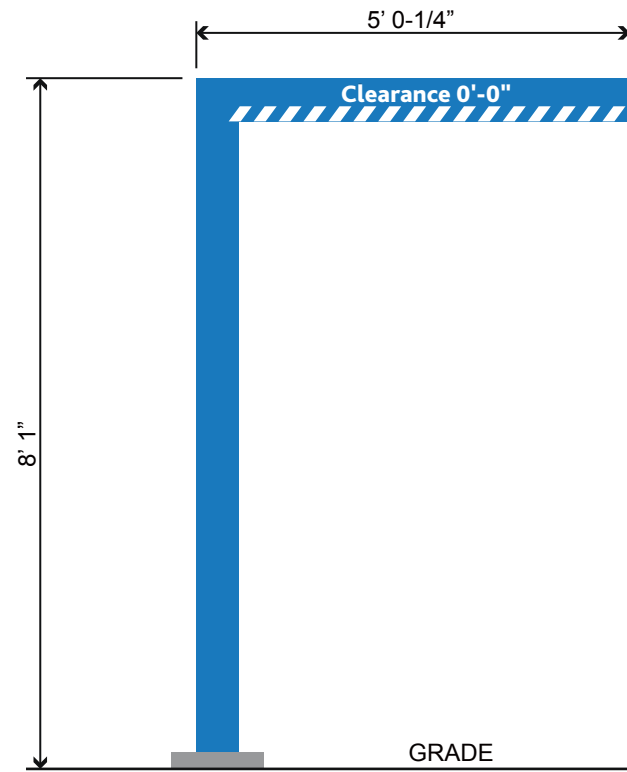
East Elevation

-   
SIBER/ENVI  
APPLICATION: EXTERIOR  
COLOR: CLEAR ANODIZED
-   
SIBER/ENVI/CANOPY/ROOFING/COPING  
APPLICATION: EXTERIOR  
COLOR: BLACK ANODIZED
-   
PAINT  
APPLICATION: EXTERIOR  
COLOR: TO MATCH: SHERWIN WILLIAMS  
SW 7046 INTELLECTUAL GRAY
-   
PAINT  
APPLICATION: EXTERIOR  
COLOR: TO MATCH: SHERWIN WILLIAMS  
SW 7036 ACCESSIBLE BEIGE
-   
CONCRETO STONE  
APPLICATION: EXTERIOR  
COLOR: CHISELED LIMESTONE - CREAM
-   
ALUMINUM COMPOSITE MATERIAL (ACM)  
APPLICATION: CANOPY  
COLOR: CHASE SILVER
-   
NICHIA  
APPLICATION: EXTERIOR  
COLOR: VINTAGEWOOD - BARK
-   
ENDICOTT THIN BRICK  
APPLICATION: EXTERIOR  
COLOR: LIGHT GREY BLEND

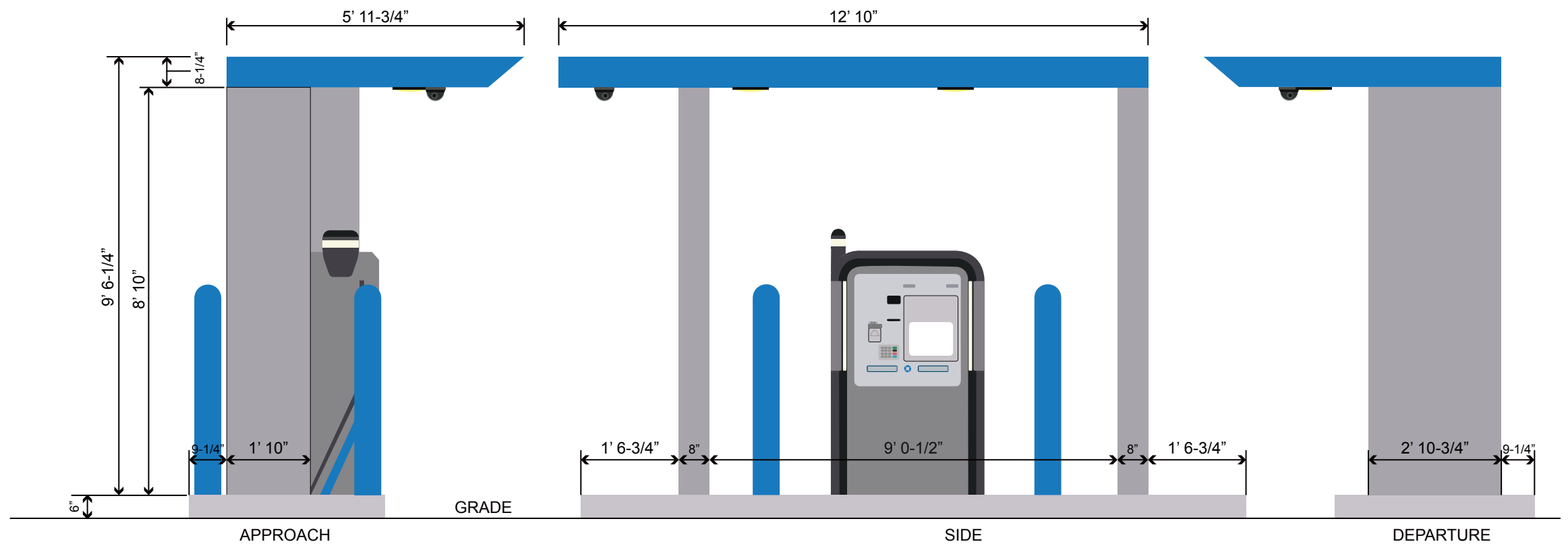
# NO SIGNAGE



DAY 2



**HB-U**  
**HEADACHE BAR**  
SCALE: NTS



**CAN-ATM-SIG-CUST**  
**SIGNATURE DRIVE-UP CANOPY - No CHASE/OCTAGON BRANDING**  
SCALE: NTS

Permitted & Installed by Others.



CHS.NB.1160 - Reading  
431 Main Street  
Reading, MA 01867

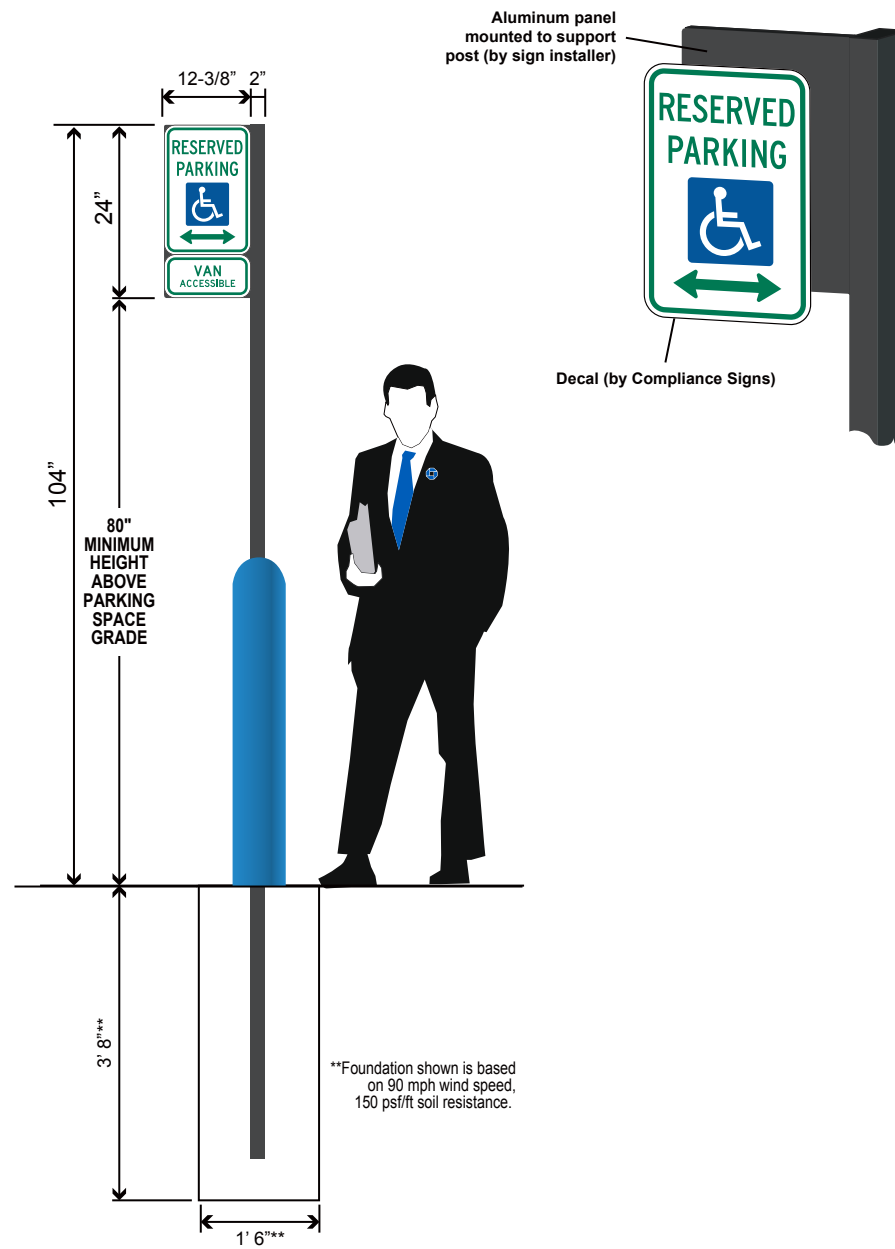
DESIGNER - JM  
CREATED - 09.24.22  
DRAWING - B102357

**PHILADELPHIASIGN**  
BRINGING THE WORLD'S BRANDS TO LIFE  
707 WEST SPRING GARDEN ST • PALMYRA, NJ • 08065  
P: 856-829-1460 • F: 856-829-8549 • WEB: <http://www.philadelphiasign.com>

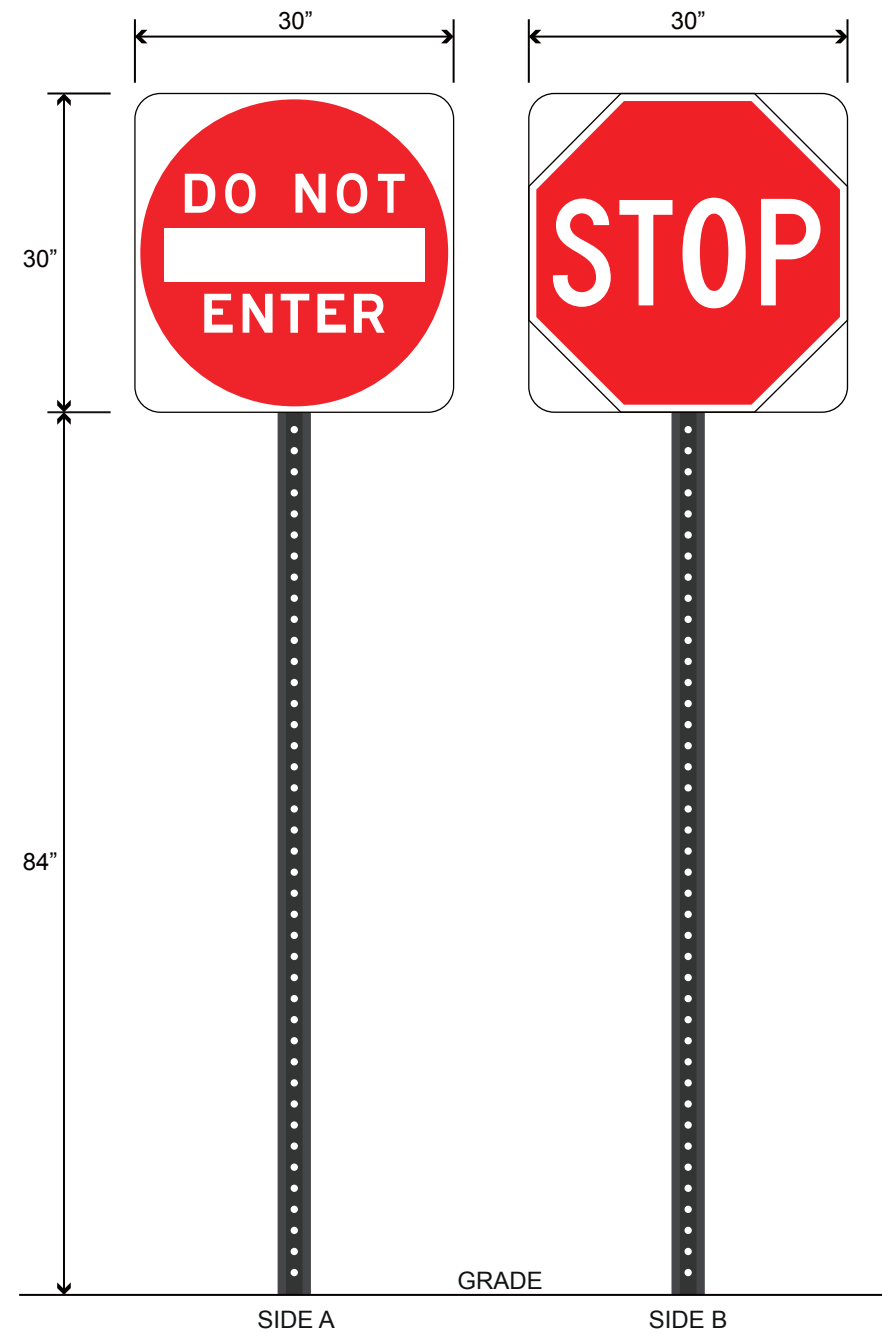
THIS IS AN ORIGINAL UNPUBLISHED DRAWING CREATED BY P.S.C.O. IT IS SUBMITTED FOR YOUR PERSONAL USE IN CONJUNCTION WITH A PROJECT BEING PLANNED FOR YOU BY P.S.C.O. IT IS NOT TO BE SHOWN TO ANYONE OUTSIDE YOUR ORGANIZATION NOR IS IT TO BE USED, COPIED, REPRODUCED, OR EXHIBITED IN ANY FASHION.



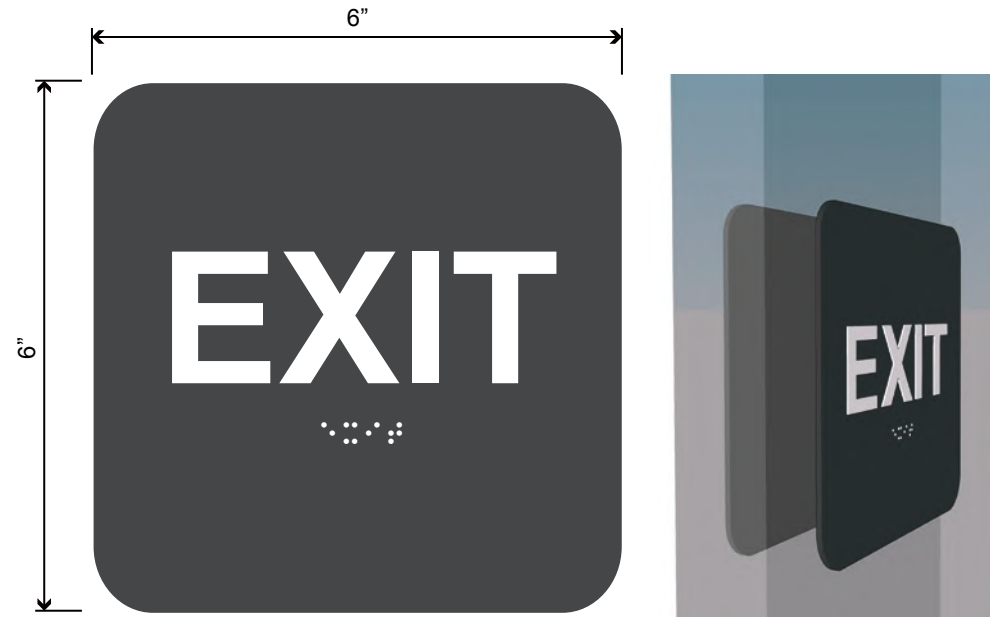
**TC-P-ADA-V-RE-MA**  
**POLE MOUNTED ADA PARKING REGULATORY**  
**SIGN W/ VAN ACCESS (RE-ENGINEERED)**  
 SCALE: NTS  
**NOTE: BOLLARD BY G.C.**



\*\*Foundation shown is based on 90 mph wind speed, 150 psf/ft soil resistance.



**DOT SIGN**  
**DOUBLE-FACED DO NOT ENTER / STOP DOT SIGN - POLE MOUNTED**  
SCALE: NTS



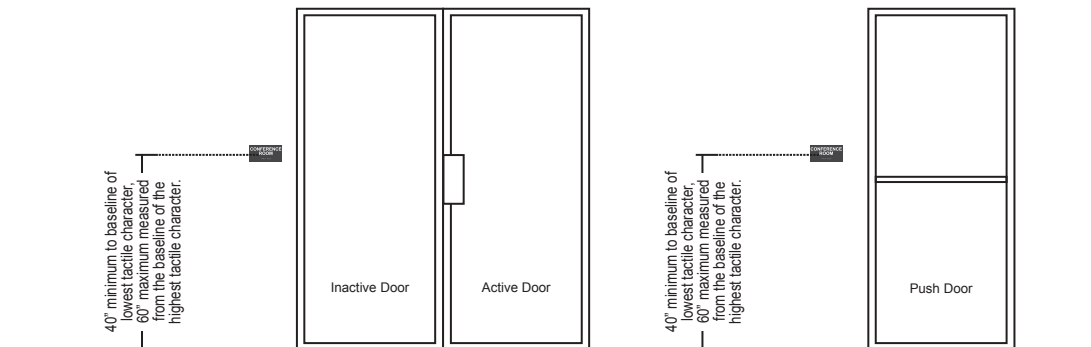
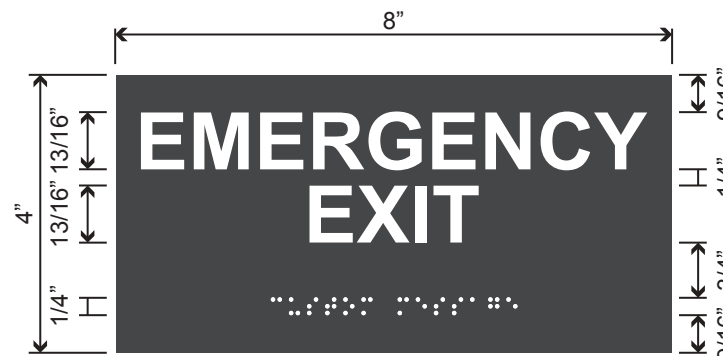
**ADA-EX**  
**HANDICAPPED EXIT PLAQUE**  
 SCALE: NTS

**SIGN I01 MOUNTS  
 BACK-TO-BACK WITH  
 SIGN E10.**

**CUST-VIN**  
**MATCHING BRONZE VINYL BACKER**  
 SCALE: NTS

**ADA-RI-X** Permanent Room ID Signage

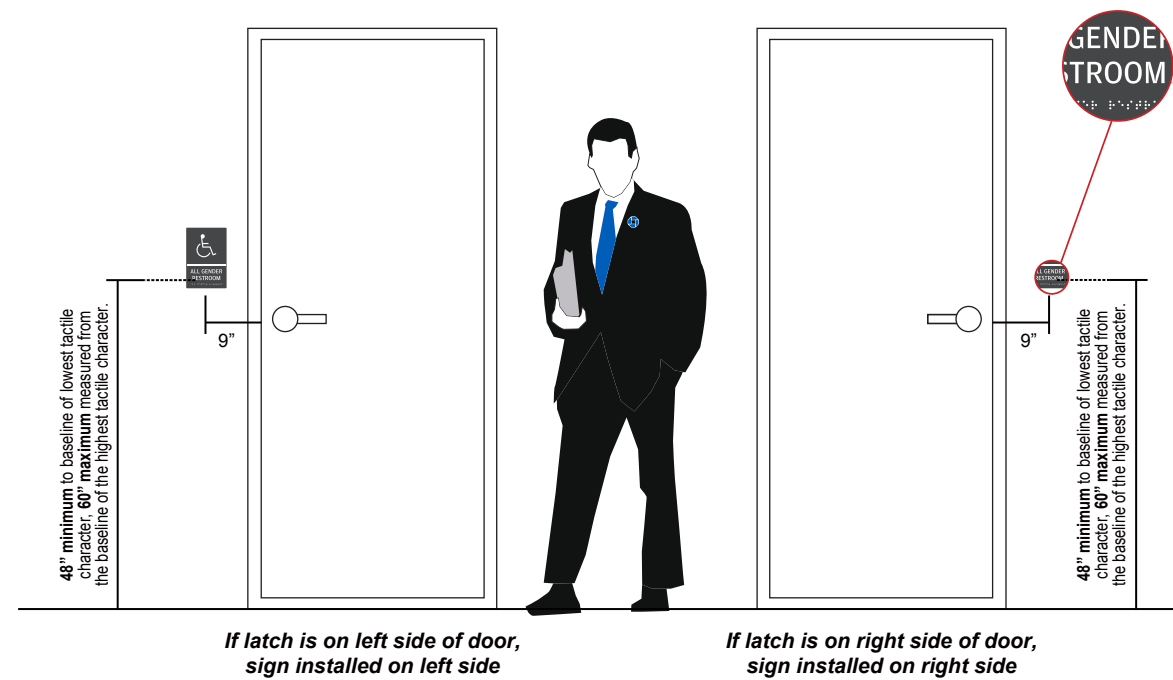
- Signs identifying a permanent room or space must be mounted on the wall, next to the door, on the latch side of the door.
- Acrylic tactile signs designed to meet Federal ADA 2010 ADAAG standards.

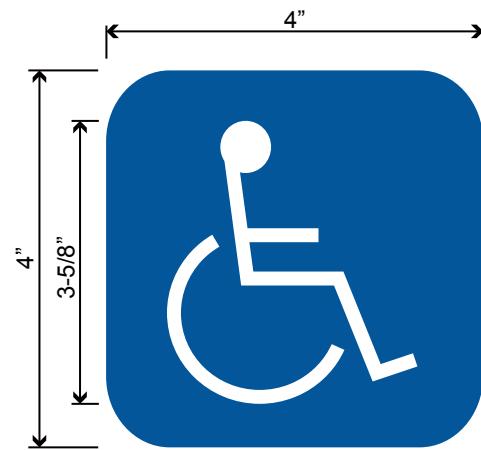




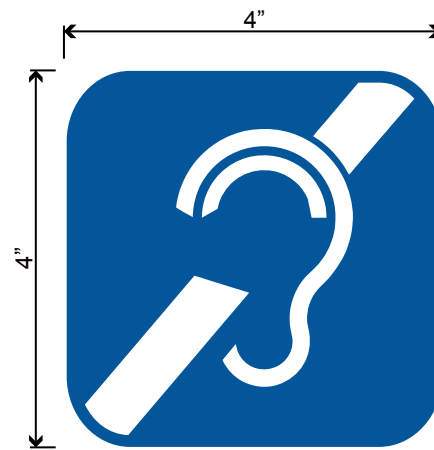
**ADA-RRAG-A-G** All Gender Neutral Restroom Signage for Restrooms that **ARE** Accessible

- Tactile sign identifying an accessible restroom entrance.
- Mounted on the wall, next to the door, on the latch side of the door.
- Acrylic tactile signs designed to meet Federal ADA 2010 ADAAG standards.

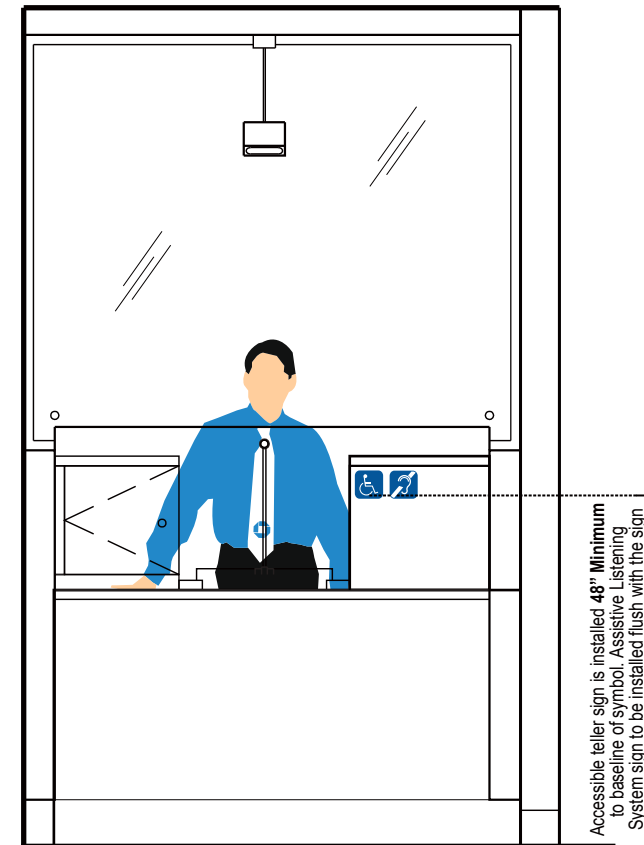




**ADA-TW**  
**ADA TELLER WALL SIGN**  
 SCALE: NTS



**ADA-TW-ALS**  
**ADA TELLER WALL SIGN - ASSISTIVE LISTENING SYSTEM**  
 SCALE: NTS

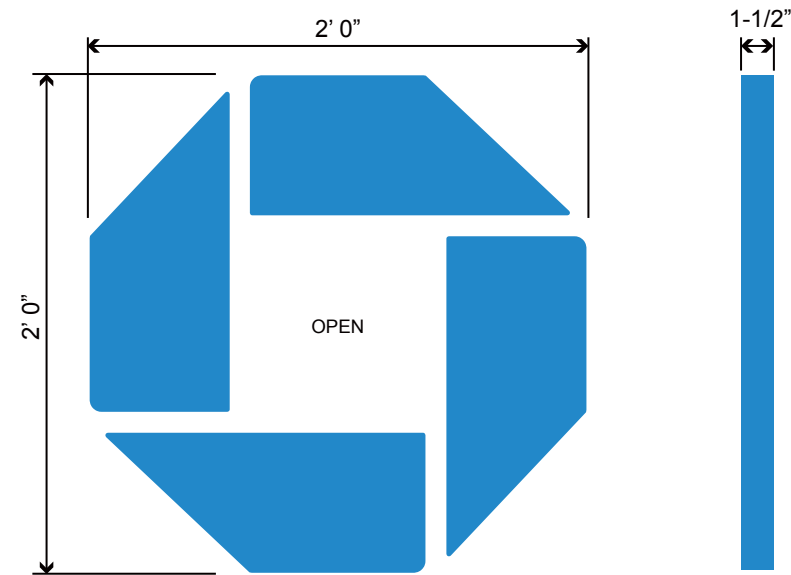


**Placement at Modular Teller Stations  
 with Bullet-Resistant Glass**

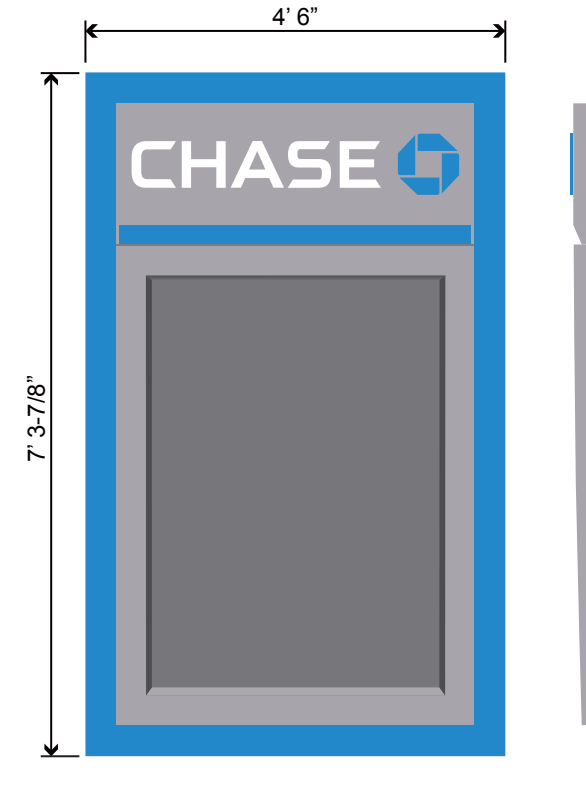
Accessible teller sign is installed 48" Minimum to baseline of symbol. Assistive Listening System sign to be installed flush with the sign on the left side as shown.



For Reference Only



**TPL-BTR-B-24**  
**24" THIN PROFILE ILLUMINATED INTERIOR BLUE OCTAGON - 4SF**  
 SCALE: NTS  
 NOTE: Octagon to be Purchased from Bitro.



**SUR-TTW-U-4-TP**  
**THIN PROFILE ATM SURROUND - 33SF**  
 SCALE: NTS

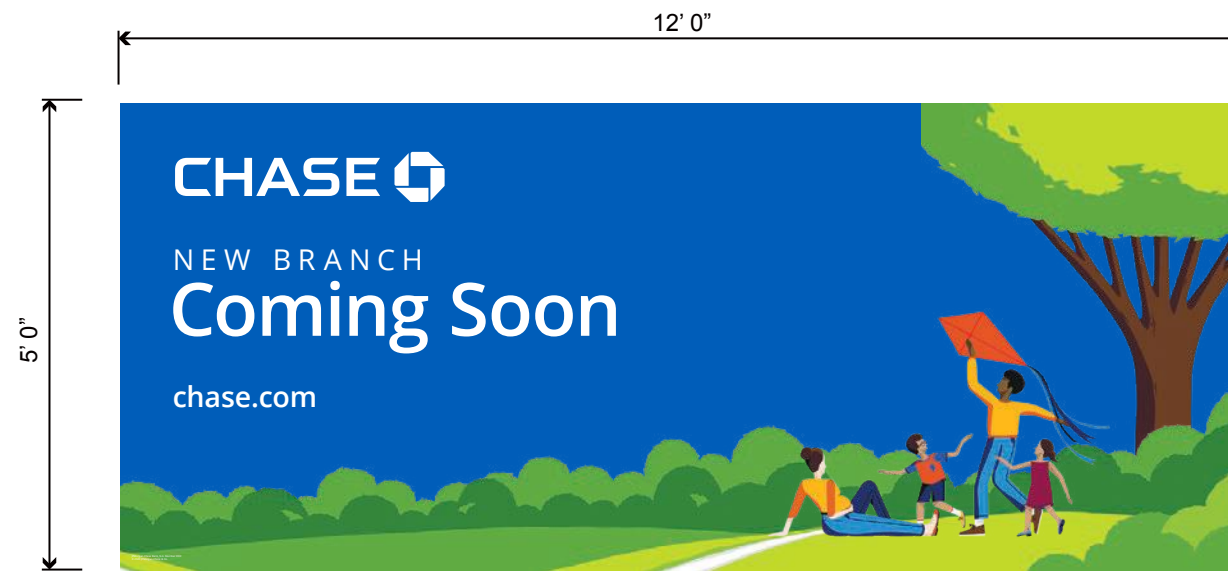


**CHS.NB.1160 - Reading**  
 431 Main Street  
 Reading, MA 01867

**DESIGNER - JM**  
**CREATED - 09.24.22**  
**DRAWING - B102357**

**PHILADELPHIASIGN**  
 BRINGING THE WORLD'S BRANDS TO LIFE  
 707 WEST SPRING GARDEN ST • PALMYRA, NJ • 08065  
 P: 856-829-1460 • F: 856-829-8549 • WEB: <http://www.philadelphiasign.com>

THIS IS AN ORIGINAL UNPUBLISHED DRAWING CREATED BY P.S.C.O. IT IS SUBMITTED FOR YOUR PERSONAL USE IN CONJUNCTION WITH A PROJECT BEING PLANNED FOR YOU BY P.S.C.O. IT IS NOT TO BE SHOWN TO ANYONE OUTSIDE YOUR ORGANIZATION NOR IS IT TO BE USED, COPIED, REPRODUCED, OR EXHIBITED IN ANY FASHION.



**CSS-FS**  
**NME "COMING SOON" FENCE MOUNTED SIGN - 60SF**  
SCALE: NTS



**CHS.NB.1160 - Reading**  
431 Main Street  
Reading, MA 01867

**DESIGNER** - JM  
**CREATED** - 09.24.22  
**DRAWING** - B102357

 **PHILADELPHIASIGN**  
BRINGING THE WORLD'S BRANDS TO LIFE  
707 WEST SPRING GARDEN ST • PALMYRA, NJ • 08065  
P: 856-829-1460 • F: 856-829-8549 • WEB: <http://www.philadelphiasign.com>

THIS IS AN ORIGINAL UNPUBLISHED DRAWING CREATED BY P.S.C.O. IT IS SUBMITTED FOR YOUR PERSONAL USE IN CONJUNCTION WITH A PROJECT BEING PLANNED FOR YOU BY P.S.C.O. IT IS NOT TO BE SHOWN TO ANYONE OUTSIDE YOUR ORGANIZATION NOR IS IT TO BE USED, COPIED, REPRODUCED, OR EXHIBITED IN ANY FASHION.



# Survey Photos



SVY.01



SVY.02



SVY.03



SVY.04



SVY.05



SVY.06



SVY.07



SVY.08



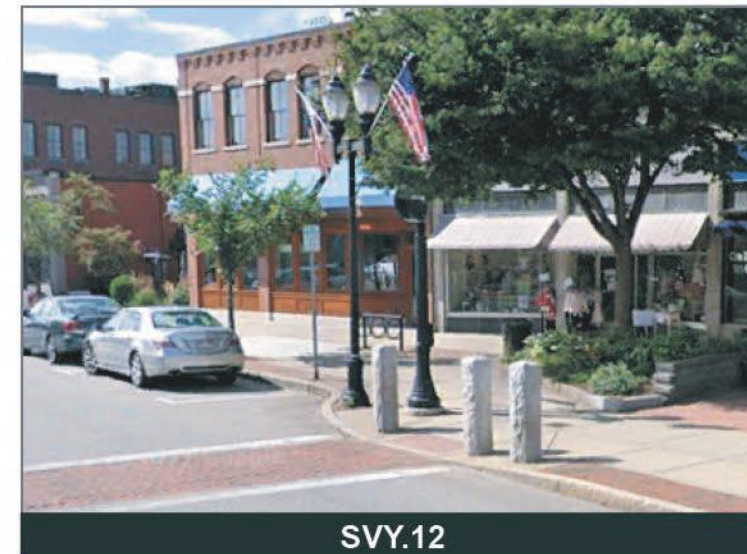
SVY.09



SVY.10



SVY.11



SVY.12



CHS.NB.1160 - Reading  
431 Main Street  
Reading, MA 01867

DESIGNER - JM  
CREATED - 09.24.22  
DRAWING - B102357

**PHILADELPHIASIGN**  
BRINGING THE WORLD'S BRANDS TO LIFE  
707 WEST SPRING GARDEN ST • PALMYRA, NJ • 08065  
P: 856-829-1460 • F: 856-829-8549 • WEB: <http://www.philadelphiasign.com>

THIS IS AN ORIGINAL UNPUBLISHED DRAWING CREATED BY P.S.C.O. IT IS SUBMITTED FOR YOUR PERSONAL USE IN CONJUNCTION WITH A PROJECT BEING PLANNED FOR YOU BY P.S.C.O. IT IS NOT TO BE SHOWN TO ANYONE OUTSIDE YOUR ORGANIZATION NOR IS IT TO BE USED, COPIED, REPRODUCED, OR EXHIBITED IN ANY FASHION.



# Survey Photos



SVY.13



SVY.14



SVY.15



SVY.16



SVY.17



SVY.18



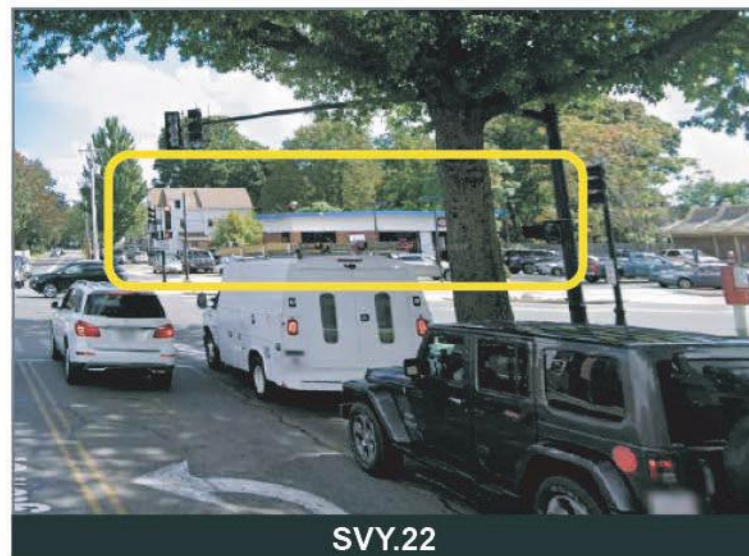
SVY.19



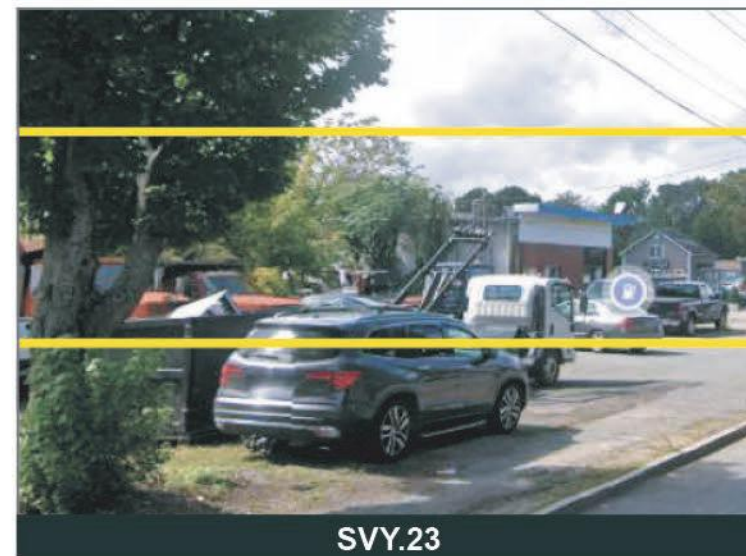
SVY.20



SVY.21



SVY.22



SVY.23



SVY.24



CHS.NB.1160 - Reading  
431 Main Street  
Reading, MA 01867

DESIGNER - JM  
CREATED - 09.24.22  
DRAWING - B102357

**PHILADELPHIASIGN**  
BRINGING THE WORLD'S BRANDS TO LIFE  
707 WEST SPRING GARDEN ST • PALMYRA, NJ • 08065  
P: 856-829-1460 • F: 856-829-8549 • WEB: <http://www.philadelphiasign.com>

THIS IS AN ORIGINAL UNPUBLISHED DRAWING CREATED BY P.S.C.O. IT IS SUBMITTED FOR YOUR PERSONAL USE IN CONJUNCTION WITH A PROJECT BEING PLANNED FOR YOU BY P.S.C.O. IT IS NOT TO BE SHOWN TO ANYONE OUTSIDE YOUR ORGANIZATION NOR IS IT TO BE USED, COPIED, REPRODUCED, OR EXHIBITED IN ANY FASHION.



# Approach Photos



**CHS.NB.1160 - Reading**  
 431 Main Street  
 Reading, MA 01867

**DESIGNER** - JM  
**CREATED** - 09.24.22  
**DRAWING** - B102357

**PHILADELPHIASIGN**  
 BRINGING THE WORLD'S BRANDS TO LIFE  
 707 WEST SPRING GARDEN ST • PALMYRA, NJ • 08065  
 P: 856-829-1460 • F: 856-829-8549 • WEB: <http://www.philadelphiasign.com>

THIS IS AN ORIGINAL UNPUBLISHED DRAWING CREATED BY P.S.C.O. IT IS SUBMITTED FOR YOUR PERSONAL USE IN CONJUNCTION WITH A PROJECT BEING PLANNED FOR YOU BY P.S.C.O. IT IS NOT TO BE SHOWN TO ANYONE OUTSIDE YOUR ORGANIZATION NOR IS IT TO BE USED, COPIED, REPRODUCED, OR EXHIBITED IN ANY FASHION.



## Code Allowances - Completed by Sign Vendor

| General Info   |  |
|--|--|
| Zoning Designation, Planner name, phone number, email address  | Town of Reading, Bus-B (Business B), Julie, 781-942-6648   |
| Temporary Signs  |  |
| Is the 8' x 4' Coming Soon Ground Sign Allowed? If so, how many?   |  |
| Are temporary banners allowed? If so, for how long?  | Yes, NTE 56 days, NTE 30 SF  |
| Primary Ground Sign  |  |
| Will code allow our standard pylon or monument? If yes, which one (ex: P-100, P-75, M-50, M-25, refer to reference guide for all standard options). Is more than 1 primary ground sign allowed?    |  |
| If not, what are the pylon / monument restrictions? (include illumination restrictions/overall allowable sf / custom design requirements)  | F/S signs are prohibited unless for a service station or by special permit in zoning Bus-B. Subject to review/ approval. All permeant signs are subject to a certificate of appropriateness by zoning district.  |
| List the set back requirements.  |  |
| Building Sign  |  |
| Prototypical FS branch - Will code allow our standard illuminated bldg. sign package (30" letterset on front & sides, 24" letterset on the rear)? Please list size and locations of signs allowed. |  |
| If not, what are the variables/restrictions (include illumination and sf restrictions, as well as custom sign requirements)?   | NTE 2 Sf/1'linear building frontage, 2nd wall sign NTE 1/2 sign area allowed for primary sign, No blinking, flashing or glare, per code signs in Bus-B must be externally lit                                    |
| In-line / Urban branch - what are the exterior wall sign restrictions (sign type, including max. sf and illumination).   |  |
| Interior Window Signs- List all interior window signs restrictions, including storefront set back requirements.  | non-lit windows NTE 30% of window, lettering NTE 8", NTE 6 SF, Illuminated window: not to be placed on door, NTE 4 SF, Must be 10' from other lit window signs, or 7' from door. Only lit during business hours. |
| ATM Topper- does this count against our overall allowable sf.? Is illumination allowed?  | Yes, Yes   |
| Are decorative logos allowed (EFIS octagon)? Does it count against overall SF?   | Yes, NTE SF limit  |
| Are entrance wall plaques allowed (CPC plaque)?  | yes, NTE 4 SF, NTE 8' in height  |
| Directional / Regulatory Signs   |  |
| Is our standard directional and regulatory sign package allowed?   |  |
| If not, what are the variables/restrictions?   | F/S signs are prohibited unless for a service station or by special permit in zoning Bus-B. Subject to review/ approval.   |
| Awnings / ATM Sunscreens   |  |
| Are branded awnings allowed?   | Yes  |
| What if any restrictions are there (Illumination, color/materials, min & max projection)?  | text NTE 4" in height, length NTE 36" w/out sign permit. letters do not count towards allowed sign area, No lighting or glow to be seen through awning   |
| Are ATM sunscreens allowed? Do they count against overall SF?  | yes, NTE wall SF allowance   |
| Is a signature canopy allowed? What are the restrictions if any?   |  |
| Other Governing Agencies   |  |
| Identify other governing agencies that could override code (ARB, HRB, PUD, etc) and list the known restrictions.   | Community Planning and Development Commission to review all signs in Business B District to get a Certificate of Appropriateness   |
| Permitting / Variance Process  |  |
| What is the application process and timing for variance approval ? What are the variance application fees?   | Once submitted approval takes about 3 months. Cost is TBD based on scope of work.  |
| What is the likelihood of being granted a variance with this municipality?   | 15% likelihood   |
| Architectural Lighting   |  |
| Is Architectural lighting allowed? Does it count against overall SF? List provisions.  | No   |
| Additional Comments  |  |
| Please list any additional comments  |  |



**GENERAL NOTES:**

CONTRACTOR SHALL COORDINATE WITH THE READING PLANNING BOARD ON ALL REQUIREMENTS FOR SITE INSPECTIONS, AS-BUILT DRAWINGS, AND FEE PAYMENT PRIOR TO CONSTRUCTION.

CONTRACTOR SHALL MAINTAIN EROSION CONTROLS THROUGHOUT CONSTRUCTION AND REPAIR OR REPLACE EROSION CONTROLS AS MAY BE REQUIRED BY THE INSPECTION ENGINEER, READING PLANNING BOARD, OR READING D.P.W.

CONTRACTOR SHALL COORDINATE WITH THE RESPECTIVE UTILITY PROVIDERS REGARDING INSTALLATION REQUIREMENTS FOR GAS, WATER, ELECTRIC, AND TELEPHONE.

**REFERENCES**

**OWNER OF RECORD**

PETER SEIBOLD  
437 SUMMER AVENUE, READING, MA  
DEED BOOK 30698 PAGE 582 M.S.R.D.

**ZONING DISTRICT**

TAX MAP 38 PARCEL 139  
S-20 DISTRICT

**PLAN REFERENCES**

PLAN NO. 1478 OF 1985  
PLAN NO. 640 OF 1967

**NOTES:**

1. THE SUBJECT PROPERTY IS LOCATED IN ZONING DISTRICT S20.
2. THIS PLAN DOES NOT SHOW ANY UNWRITTEN OR UNRECORDED EASEMENTS WHICH MAY EXIST. A REASONABLE AND DILIGENT ATTEMPT HAS BEEN MADE TO OBSERVE ANY APPARENT, VISIBLE USES OF THE LAND; HOWEVER, THIS DOES NOT CONSTITUTE A GUARANTEE THAT NO SUCH EASEMENTS EXIST.
3. ABUTTERS REFERENCES WERE COMPILED FROM AVAILABLE TOWN RECORDS AND DO NOT INDICATE AN OPINION OF TITLE OR OWNERSHIP.

**ABBREVIATED SCHEDULE OF ZONING REQUIREMENTS**

ASSESSOR'S MAP 38 PARCEL 139  
- ZONING DISTRICT: S20  
- REQUIRED LOT FRONTAGE = 120'  
- REQUIRED SETBACKS  
FRONT= 20' SIDE= 15' REAR= 20'

**INDEX OF SHEETS**

|              |                              |
|--------------|------------------------------|
| SHEET 1 OF 4 | COVER SHEET                  |
| SHEET 2 OF 4 | EXISTING CONDITIONS PLAN     |
| SHEET 3 OF 4 | PROOF OF CONCEPT PLAN        |
| SHEET 4 OF 4 | PRELIMINARY SUBDIVISION PLAN |

# PRELIMINARY SUBDIVISION

## ANNETTE LANE READING, MASSACHUSETTS

PREPARED FOR:

**PETER SEIBOLD**

PREPARED BY:

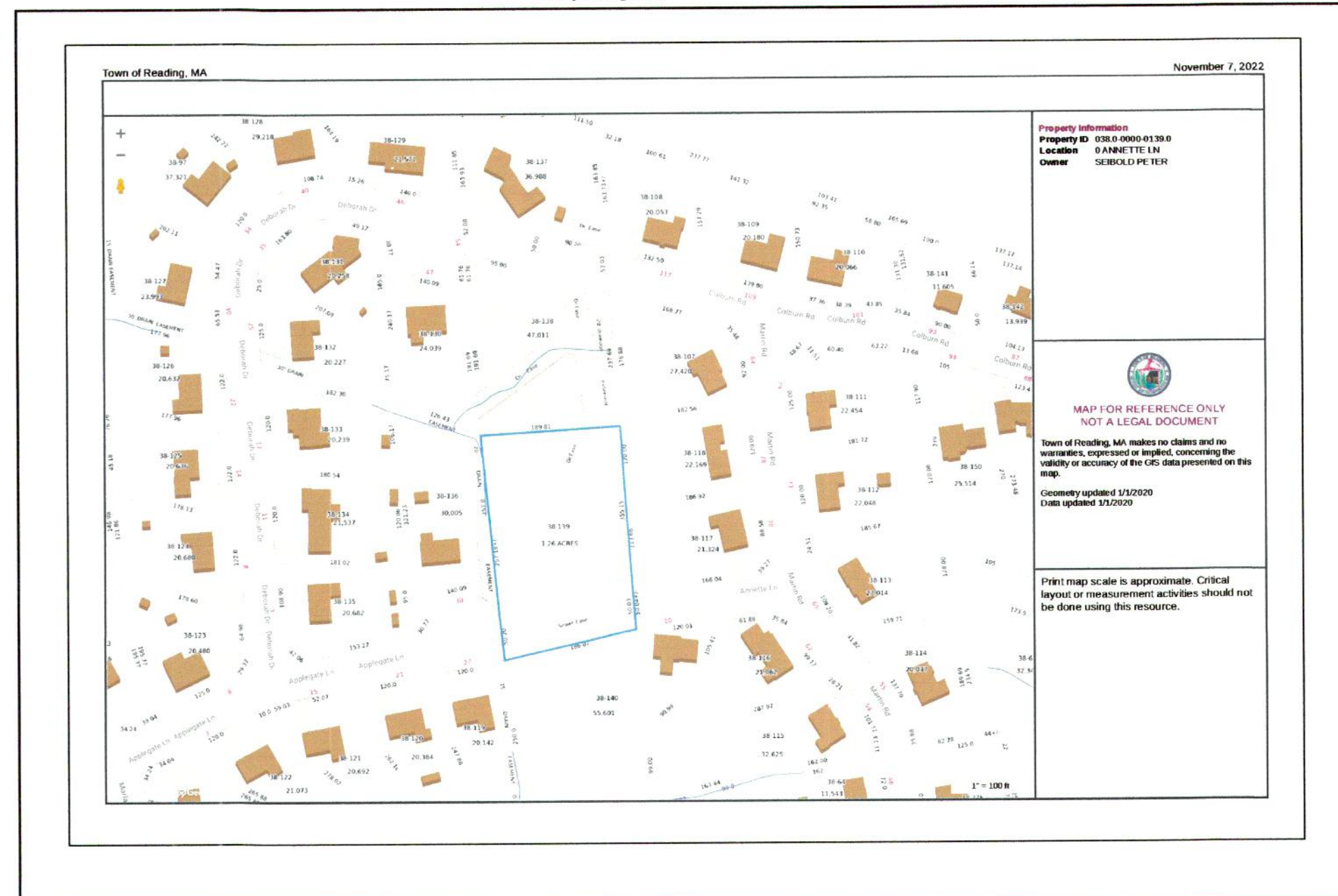
*Vineyard Engineering &  
Environmental Services Inc.*

Land Survey, Civil Engineering & Environmental Services  
17 SALEM STREET, MEDFORD MA 02155  
Tel: 781.933.3330 Fax: 781.933.3334

Vineyardeng.com

I HEREBY CERTIFY THAT THIS PLAN IS BASED ON AN ACTUAL FIELD SURVEY.

*[Signature]*  
JAMES J. ABELY  
  
 02/20/23 DATE










**LOCATION PLAN**  
SCALE: 1"=100'

**NOTE**  
EXISTING UTILITIES SHOWN ON THESE PLANS ARE COMPILED FROM RECORD INFORMATION AND APPROXIMATE FIELD LOCATION AND THEREFORE, ARE NOT CERTIFIED FOR CONSTRUCTION. PRIOR TO EXCAVATION OR CONSTRUCTION, THE CONTRACTOR MUST NOTIFY "DIGSAFE" (1-888-344-7233) SEVENTY-TWO HOURS BEFORE COMMENCING WORK.





**LEGEND:**

-  WETLAND FLAG (BY LEC ENVIRONMENTAL)
-  EOR EDGE OF ROAD
-  BSW BACK OF SIDEWALK
-  CONIFEROUS TREE (>6" DIA.)
-  DECIDUOUS TREE (>6" DIA.)
-  WATER GATE
-  100 TWO FOOT CONTOUR

| ZONING TABLE          |                |                 |
|-----------------------|----------------|-----------------|
| S-20 DISTRICT         | REQUIRED       | EXISTING        |
| LOT SIZE              | 20,000 SQ. FT. | 54,942± SQ. FT. |
| FRONTAGE              | 120.00'        | 50.03'          |
| MINIMUM LOT WIDTH     | 80.00'         | 186.06'         |
| MINIMUM FRONT SETBACK | 20.0'          | ---             |
| MINIMUM SIDE SETBACK  | 15.0'          | ---             |
| MINIMUM REAR SETBACK  | 20.0'          | ---             |
| MAX. LOT COVERAGE     | 25%            | ---             |
| HEIGHT                | 35'            | ---             |
| WETLAND AREA          |                | 17,357 SQ. FT.  |
| UPLAND AREA           |                | 37,585 SQ. FT.  |

**OWNER OF RECORD**  
 PETER SEIBOLD  
 437 SUMMER AVENUE, READING, MA  
 DEED BOOK 30698 PAGE 582 M.S.R.D.

**ZONING DISTRICT**

TAX MAP 38 PARCEL 139  
 S-20 DISTRICT

**PLAN REFERENCES**

PLAN NO. 1478 OF 1985  
 PLAN NO. 640 OF 1967

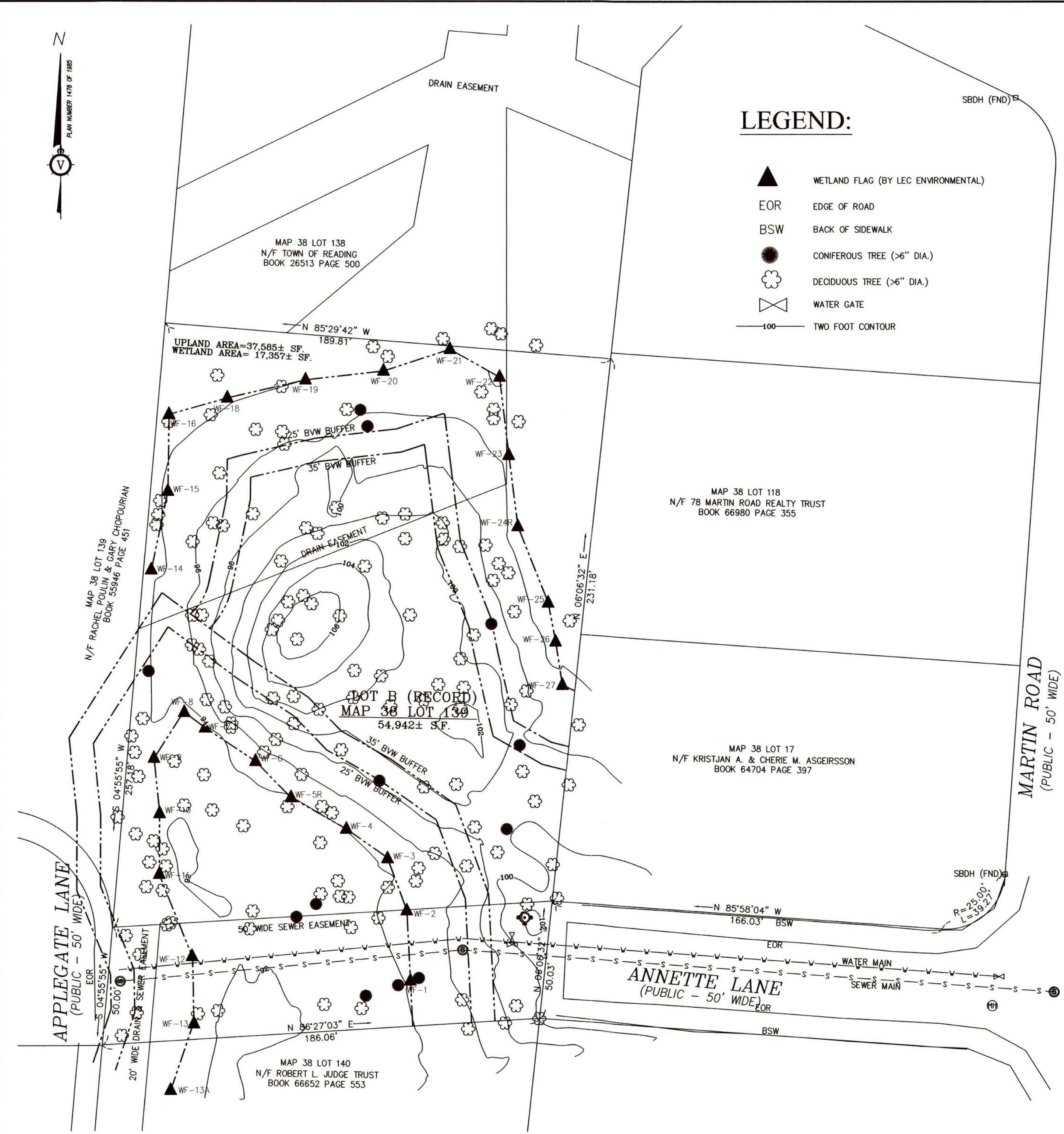
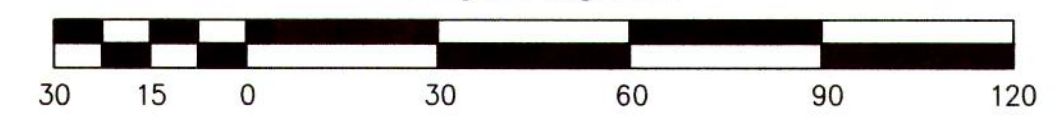
I HEREBY CERTIFY THAT THIS PLAN IS BASED ON AN ACTUAL FIELD SURVEY.



PLAN OF LAND  
 EXISTING CONDITIONS  
 ANNETTE LANE  
 READING, MA

SCALE 1" = 30'      FEBRUARY 20, 2023  
 PREPARED BY








**VINEYARD ENGINEERING  
 & ENVIRONMENTAL SERVICES INC.**  
 LAND SURVEY, CIVIL ENGINEERING  
 & ENVIRONMENTAL SERVICES  
 17 SALEM STREET  
 MEDFORD MA 02155  
 TEL. 781-933-3330 FAX. 781-933-3334  
 Vineyardeng.com







**LEGEND:**

-  WETLAND FLAG (BY LEC ENVIRONMENTAL)
-  EOR
-  BSW
-  CONIFEROUS TREE (>6" DIA.)
-  DECIDUOUS TREE (>6" DIA.)
-  WATER GATE
-  100 TWO FOOT CONTOUR

| ZONING TABLE          |                |                  |                  |                        |
|-----------------------|----------------|------------------|------------------|------------------------|
| S-20 DISTRICT         | REQUIRED       | EXISTING         | PROPOSED LOT B-1 | PROPOSED ROW EXTENSION |
| LOT SIZE              | 20,000 SQ. FT. | 54,942 ± SQ. FT. | 43,740 ± SQ. FT. | 11,201 ± SQ. FT.       |
| FRONTAGE              | 120.00'        | 50.03'           | 186.06'          | 186.06'                |
| MINIMUM LOT WIDTH     | 80.00'         | 186.06'          | 186.06'          | 186.06'                |
| MINIMUM FRONT SETBACK | 20.0'          | ---              | 94.8'            | ---                    |
| MINIMUM SIDE SETBACK  | 15.0'          | ---              | 54.4'            | ---                    |
| MINIMUM REAR SETBACK  | 20.0'          | ---              | 106.3'           | ---                    |
| MAX. LOT COVERAGE     | 25%            | ---              | 3.8%             | ---                    |
| HEIGHT                | 35'            | ---              | LESS THAN 35'    | ---                    |
| WETLAND AREA          |                | 17,357 ± SQ. FT. | 7,084 ± SQ. FT.  | 5,634 ± SQ. FT.        |
| UPLAND AREA           |                | 37,585 ± SQ. FT. | 36,656 ± SQ. FT. | 5,567 ± SQ. FT.        |

**OWNER OF RECORD**  
 PETER SEIBOLD  
 437 SUMMER AVENUE, READING, MA  
 DEED BOOK 30698 PAGE 582 M.S.R.D.

**ZONING DISTRICT**

TAX MAP 38 PARCEL 139  
 S-20 DISTRICT

**PLAN REFERENCES**

PLAN NO. 1478 OF 1985  
 PLAN NO. 640 OF 1967

I HEREBY CERTIFY THAT THIS PLAN IS BASED ON AN ACTUAL FIELD SURVEY.

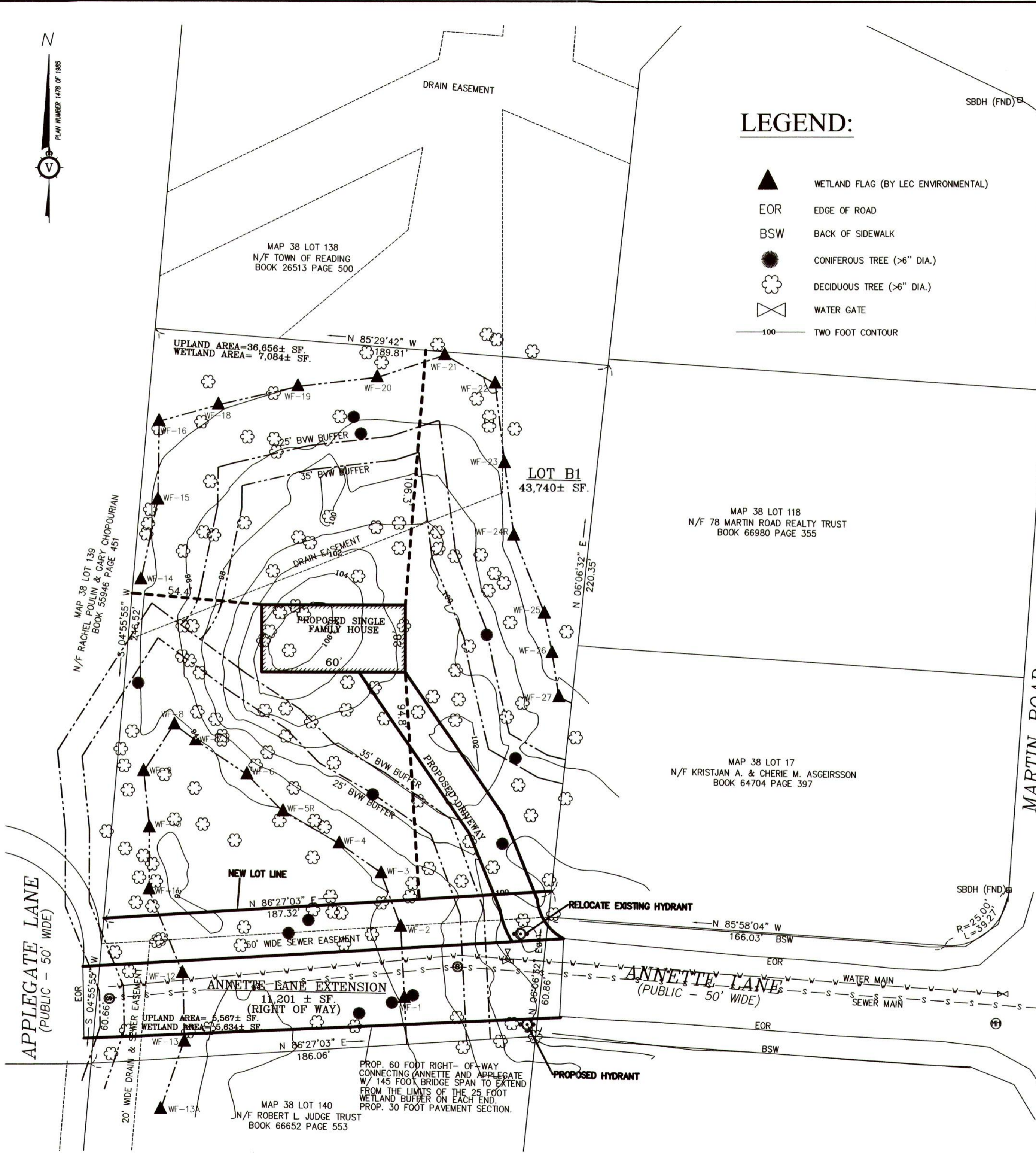
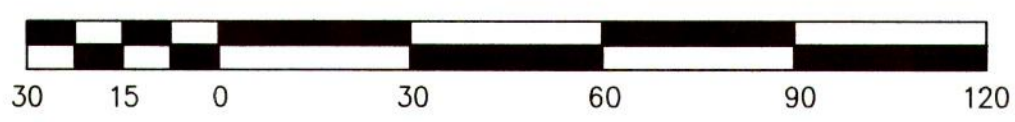
  
 JAMES J. ABELY  
 LAND SURVEYOR  
 STATE OF MASSACHUSETTS  
 No. 28520  
 DATE 2/23

**PROOF OF CONCEPT PLAN**

ANNETTE LANE  
 READING, MA

SCALE 1" = 30'      FEBRUARY 20, 2023  
 PREPARED BY

**VINEYARD ENGINEERING & ENVIRONMENTAL SERVICES INC.**  
 LAND SURVEY, CIVIL ENGINEERING & ENVIRONMENTAL SERVICES  
 17 SALEM STREET  
 MEDFORD MA 02155  
 TEL. 781-933-3330 FAX. 781-933-3334  
 Vineyardeng.com







**LEGEND:**

- WETLAND FLAG (BY LEC ENVIRONMENTAL)
- EOR EDGE OF ROAD
- BSW BACK OF SIDEWALK
- CONIFEROUS TREE (>6" DIA.)
- DECIDUOUS TREE (>6" DIA.)
- WATER GATE
- TWO FOOT CONTOUR
- PROPOSED POWER POLE

| ZONING TABLE          |                |                  |                  |                        |
|-----------------------|----------------|------------------|------------------|------------------------|
| S-20 DISTRICT         | REQUIRED       | EXISTING         | PROPOSED LOT B-1 | PROPOSED ROW EXTENSION |
| LOT SIZE              | 20,000 SQ. FT. | 54,942 ± SQ. FT. | 43,740 ± SQ. FT. | 11,201 ± SQ. FT.       |
| FRONTAGE              | 120.00'        | 50.03'           | 186.06'          | 186.06'                |
| MINIMUM LOT WIDTH     | 80.00'         | 186.06'          | 186.06'          | 186.06'                |
| MINIMUM FRONT SETBACK | 20.0'          | ---              | 94.8'            | ---                    |
| MINIMUM SIDE SETBACK  | 15.0'          | ---              | 54.4'            | ---                    |
| MINIMUM REAR SETBACK  | 20.0'          | ---              | 106.3'           | ---                    |
| MAX. LOT COVERAGE     | 25%            | ---              | 3.8%             | ---                    |
| HEIGHT                | 35'            | ---              | LESS THAN 35'    | ---                    |
| WETLAND AREA          |                | 17,357 ± SQ. FT. | 7,084 ± SQ. FT.  | 5,634 ± SQ. FT.        |
| UPLAND AREA           |                | 37,585 ± SQ. FT. | 36,656 ± SQ. FT. | 5,567 ± SQ. FT.        |

TOTAL IMPERVIOUS AREA LOT B-1  
3,407 SF/7.8%

**OWNER OF RECORD**  
PETER SEIBOLD  
437 SUMMER AVE., READING, MA  
DEED BOOK 30698 PAGE 582

**NOTES**  
STORMWATER INFILTRATION SYSTEM TO CONSIST OF CULTEC 280HD CHAMBERS, OR SIMILAR, DESIGNED TO CAPTURE 100% OF IMPERVIOUS AREAS.

**ZONING DISTRICT**  
TAX MAP 38 PARCEL 139  
S-20 DISTRICT

PROPOSED DRIVEWAY CONSTRUCTION TO MEET ACCEPTED STANDARDS IN JUDGEMENT OF THE TOWN ENGINEER TO ACCOMODATE PRIVATE AUTOMOBILES, SERVICE VEHICLES, AND EMERGENCY VEHICLES.

**PLAN REFERENCES**  
PLAN NO. 1478 OF 1985  
PLAN NO. 640 OF 1967

I HEREBY CERTIFY THAT THIS PLAN IS BASED ON AN ACTUAL FIELD SURVEY.

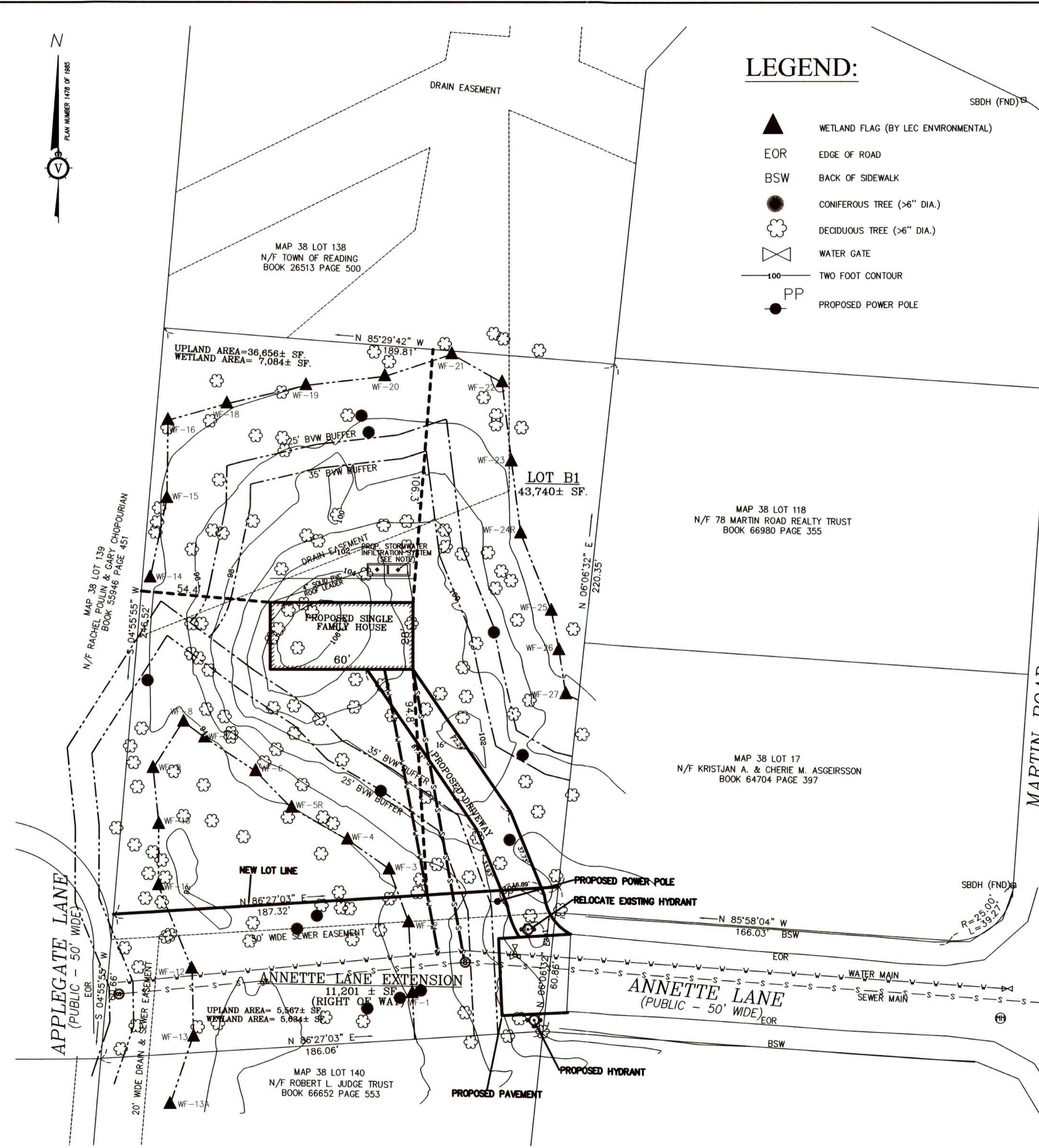
JAMES J. ABELY  
P.L.S.

PRELIMINARY SUBDIVISION PLAN

ANNETTE LANE  
READING, MA

SCALE 1" = 30'      FEBRUARY 20, 2023  
PREPARED BY

VINEYARD ENGINEERING  
& ENVIRONMENTAL SERVICES INC.  
LAND SURVEY, CIVIL ENGINEERING  
& ENVIRONMENTAL SERVICES  
17 SALEM STREET  
MEDFORD MA 02155  
TEL. 781-933-3330 FAX. 781-933-3334  
Vineyardeng.com





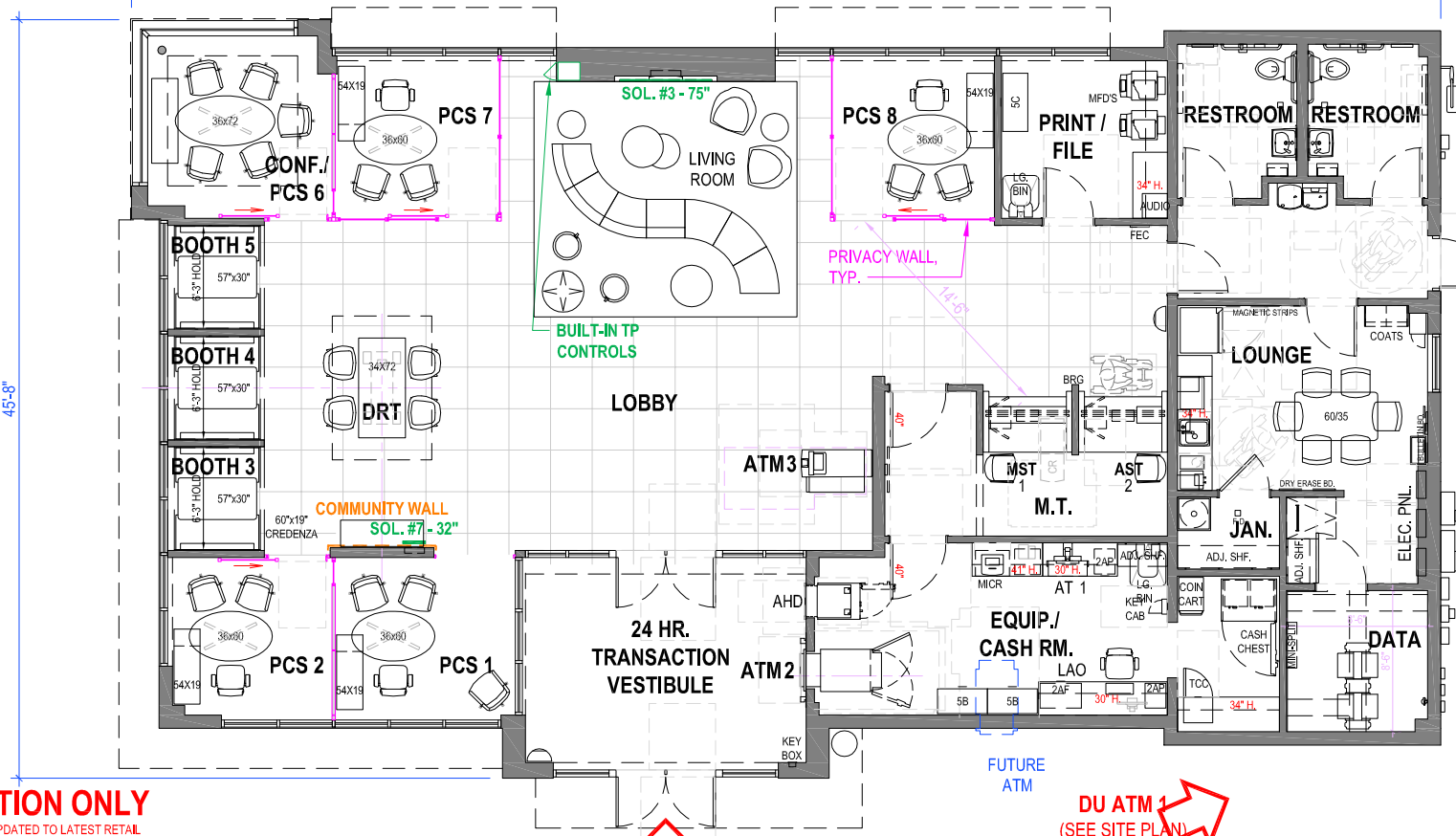
NOTE: TILE SHOWN FOR PATTERN ONLY.  
ACTUAL TILE SIZE AND SPACING TO BE LAID  
OUT AND VERIFIED BY THE ARCHITECT OF  
RECORD TO REFLECT THE DESIGN INTENT.  
DO NOT REMOVE THIS TAG FROM FLOOR PLAN

WASHINGTON ST.

78'-10"

MAIN ST.

45'-8"



**INFORMATION ONLY**  
FLOOR PLAN WILL BE UPDATED TO LATEST RETAIL  
DESIGN STANDARDS AND VALIDATED W/ BUDGET.  
NOTE TO AOR; DO NOT PROCEED WITH CONSTRUCTION  
DOCUMENTS IF THIS STAMP IS PRESENT.

100%  
ENTRY

DU ATM 1  
(SEE SITE PLAN)

Teller Line BRG YES  NO

Regional Director (RD) \_\_\_\_\_ DATE \_\_\_\_\_

REGION - NEW ENGLAND  
PMWeb ID - 48100R001272

(1) OFFICE SHALL RECEIVE DUAL MONITORS  
& ARMS FOR CPC OR FUTURE CPC.

CPC / Future CPC Office \_\_\_\_\_

Operating Model Lead (OML) \_\_\_\_\_ DATE \_\_\_\_\_

DESIGN STANDARDS  
20.5

HARDINESS ZONE 6A  
WEATHER VESTIBULE REQUIRED \*  
\* HARDINESS ZONES <= 6B

Neighborhood Name \_\_\_\_\_



PROPOSED FLOOR PLAN  
**READING**  
431Main St, Reading, MA 01867



| DATE      | DESIGNER | AREA        | SCALE |
|-----------|----------|-------------|-------|
| 25 JUL 22 | KMS      | +/-3,245 SF | NONE  |

April 3, 2023

Community Planning & Development  
Andrew MacNichol, Community Development Director  
16 Lowell St  
Reading, MA 01867

**Re: Chase Bank - 431 Main St, Reading**

Dear Mr. MacNichol:

Bohler Engineering is in receipt of a comment email from your office., dated March 20, 2023. On behalf of Applicant Chase Bank, Bohler offers the following responses. For clarity, the original comments are in **italics**, while our responses are directly below in **bold** type.

### ACCESS/CIRCULATION

*Comment # 1 Please look to maintain the raised islands within the curb cuts that would help direct traffic to the right turn only movements. A mountable material is best to help satisfy any public safety needs and we can discuss with them. A detail on such would be helpful if at all possible.*

**Response: Refer to the updated Site Plan (C-301) prepared by Bohler. Mountable concrete islands have been added to both site entrances along with crosswalks. The sidewalk grades will be flush across the drive-way and the ADA ramps have been removed.**

*Comment #2 Please look to provide accessible pedestrian enhancements across the driveways to the maximum extent possible (i.e. striping/crosswalks/signage/etc.)*

**Response: Refer to the updated Site Plan (C-301) prepared by Bohler. Crosswalks have been added.**

### FAÇADE

*Comment #3 Please look to modify and activate facades that are visible from Main Street. Whether it be through material change (i.e. adding/modifying stone design, etc.) or visible design (i.e. projecting features, awnings, windows, etc.).*

**Response: Refer to the revised Proposed Exterior Elevations prepared by Core States Group.**

*Comment #4 Is it possible to have front door fronting Main Street?*

- I have attached CPDC member comments on such that reflect differing possibilities that Chase Bank has done (you may also look to the Peabody branch at North Shore Mall which has a design fronting 114 rather than the malls parking lot).*

**Response: Refer to the revised Proposed Exterior Elevations prepared by Core States Group.**

*Comment #5 I have also attached our Downtown Design Guidelines that are typical for 40R mixed-use projects but there is likely applicable language the design team could pull from here.*

**Response:** Refer to the revised Proposed Exterior Elevations prepared by Core States Group.

## **DRAINAGE:**

*Comment #6 Please provide on-site infiltration and treatment to the maximum extent possible. The Town Engineer will review and comment.*

**Response:** Refer to the revised Grading & Drainage Plan (C-401). The design includes construction of 40 Stormtech SC-740 units. Along with deep-sump catch basins, an isolator row will also be provided for added water quality improvements. The system as designed will contain and infiltrate up to the 25-year storm event

## **SIGNAGE:**

*Comment #7 Modify to what is allowed by-right (2 wall signs)*

**Response:** Refer to the revised sign package prepared by Philadelphia Sign. Two wall signs are now being proposed.

*Comment #8 Can the car centric free-standing sign be modified to a pedestrian monument sign? If your team is open to such we may need to discuss process as this may trigger a Special Permit process through CPDC*

**Response:** Refer to the revised sign package prepared by Philadelphia Sign. The existing pylon sign will be removed, and a monument sign is being proposed between main street and the proposed building.

*Comment #9 Just a note that prior to install of signage we will need the sign permit application and fee but I am okay with awaiting to see what is approved through the CPDC hearing process prior to*

**Response:** Comment acknowledged.

## **ENVIRONMENTAL:**

*Comment #10 An RDA will be needed through conservation*

- We may wish for Chuck to comment on any stream/resource area restrictions (I am not sure the 150' restriction mentioned during public comment applies here but we should confirm).*

**Response:** Comment acknowledged. Our office is currently preparing an RDA filing with the Conservation Commission.

*Comment #11 Is there any information to be shared on who is liable for any future remediation triggered?  
Is there any findings from the 21E that may help drainage design?*

**Response: Our office is waiting on confirmation and will respond during the next Public Hearing.**

*Comment #12 Expect a condition on maintenance of the abutting grassed lot (perhaps through a property management plan?)*

**Response: Comment acknowledged.**

We trust the above as well as the attached information are sufficient for your review of the project. Should you have any questions or require additional information, please do not hesitate to contact me at (508) 480-9900. Thank you.

Sincerely,  
**Bohler**



Joey Fonseca

CC: Core States Group

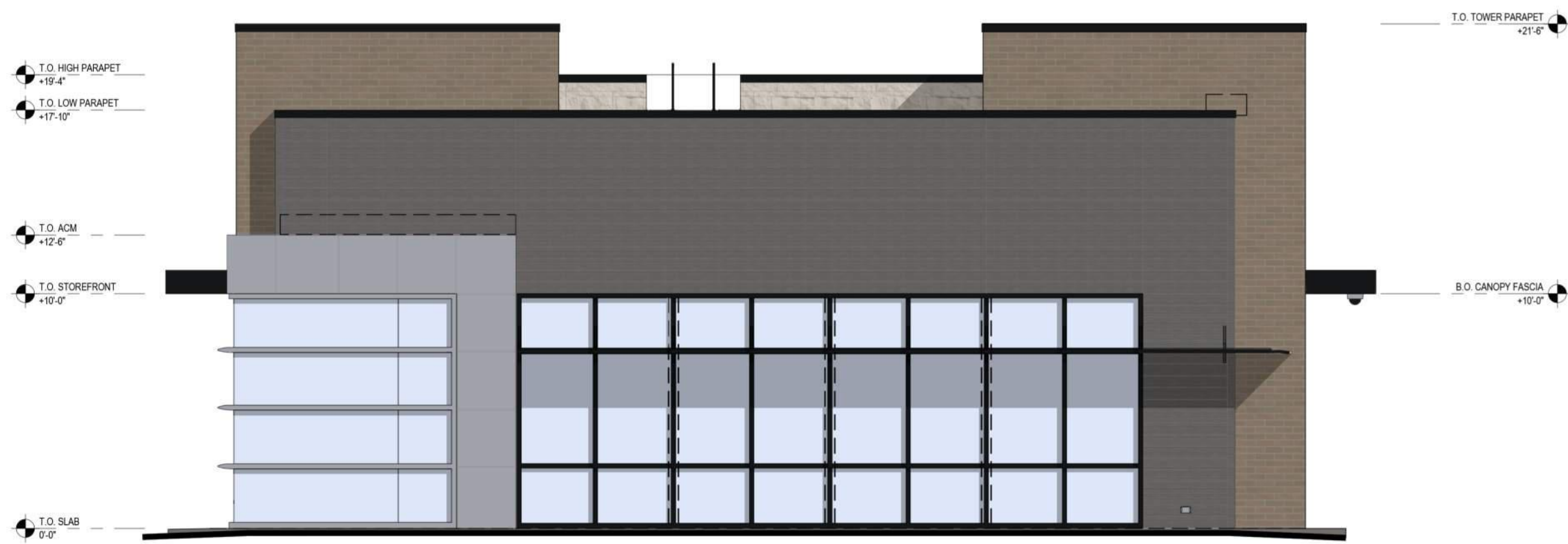




EAST ELEVATION



NORTH ELEVATION



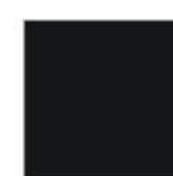
WEST ELEVATION



SOUTH ELEVATION



STOREFRONT  
APPLICATION: EXTERIOR  
COLOR: CLEAR ANODIZED



STOREFRONT/CANOPY/ROOFING/COPING  
APPLICATION: EXTERIOR  
COLOR: BLACK ANODIZED



PAINT  
APPLICATION: EXTERIOR  
COLOR: TO MATCH SHERWIN WILLIAMS  
SW-7045 INTELLECTUAL GRAY



PAINT  
APPLICATION: EXTERIOR  
COLOR: TO MATCH SHERWIN WILLIAMS  
SW-7036 ACCESSIBLE BEIGE



CORONADO STONE  
APPLICATION: EXTERIOR  
COLOR: CHISELED LIMESTONE - CREAM



ALUMINUM COMPOSITE MATERIAL (AMC)  
APPLICATION: CANOPY  
COLOR: "CHASE SILVER"



NICHIHA  
APPLICATION: EXTERIOR  
COLOR: VINTAGEWOOD - BARK



ENDICOTT THIN BRICK  
APPLICATION: EXTERIOR  
COLOR: LIGHT GREY BLEND



TOWN OF READING MASSACHUSETTS  
COMMUNITY PLANNING AND DEVELOPMENT COMMISSION  
APPLICATION FOR SUBDIVISION APPROVAL  
**Form B**

Pursuant to the Rules and Regulations Governing the Subdivision of Land in Reading Massachusetts:

- Preliminary Subdivision Plan (Section 5.0)
- Resubmission of Preliminary Subdivision Plan
- Definitive Subdivision Plan (Section 6.0)
- Resubmission of Definitive Subdivision Plan
- Modification to a Previously Approved Definitive Subdivision Plan

=====

Location of Subject Property:

Address: Annette Lane

Assessors' plat and lot number: 38-139

Deed of property is recorded in the Middlesex South Registry  
in Book 30698 on page 582

List of Names, Addresses, and telephone numbers of the following:

Applicant:  
Peter Seibold  
437 Summer Avenue  
Reading, MA

Owner of the Subject Property  
 Written evidence is attached  
whereby the owner has given the  
applicant authority to make this  
application

Applicant's Attorney:  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Applicant's Surveyor:  
James J. Abely  
17 Salem Street  
Medford, MA 02155  
781-933-3330

Applicant's Architect:  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Applicant's Engineer:  
James J. Abely  
17 Salem Street  
Medford, MA 02155  
781-933-3330

List of local permits and approvals required for this project; indicate which have been applied for and if so which have been already received:

| Permit: | Date Applied for: | Date Received: |
|---------|-------------------|----------------|
| _____   | _____             | _____          |
| _____   | _____             | _____          |
| _____   | _____             | _____          |
| _____   | _____             | _____          |
| _____   | _____             | _____          |
| _____   | _____             | _____          |
| _____   | _____             | _____          |
| _____   | _____             | _____          |
| _____   | _____             | _____          |
| _____   | _____             | _____          |

**Waiver Requests:**

The applicant hereby requests CPDC to consider the following waivers from the Rules and Regulations Governing the Subdivision of Land in Reading:

| Section:           | Nature of Requested Waiver: |
|--------------------|-----------------------------|
| <u>6.1.1(d)(3)</u> | Traffic Study               |
| <u>6.1.1(d)(5)</u> | Test Borings                |
| <u>6.1.1(c)(3)</u> | Road Profile                |
| <u>6.1.1.4</u>     | Environmental Impact Report |
| <u>7.1.7</u>       | Curbing                     |
| <u>7.1.8</u>       | Monuments                   |
| <u>7.1.11</u>      | Street Lighting             |
| <u>7.1.1(a)</u>    | Roadway Width               |
| <u>7.2</u>         | Sidewalks                   |
| <u>7.6.1</u>       | Street Trees                |
| <u>8.0</u>         | Construction of Ways        |

Note: Attach additional letter-size pages as necessary to complete any above item

**Previous Preliminary Plan:**

A Preliminary Plan similar to that shown herewith was \_\_\_\_\_ or was not X submitted; if so an approval \_\_\_\_\_ or disapproval \_\_\_\_\_ was granted on (date) \_\_\_\_\_

**Certification of Conservation Applicability:**

The Subject Property does not \_\_\_\_\_ or, does X contain wetlands  
 A Wetlands Resource Delineation has not been issued \_\_\_\_\_ or has been issued X  
 by the Conservation Commission on (date) 11/13/2019  
 Conservation Administrator: \_\_\_\_\_ Date: \_\_\_\_\_  
 Signature

**Application Fee:**

- \$ 170 Preliminary Application Fee
- \$ \_\_\_\_\_ Definitive Application Fee, where no Preliminary Application was filed or Resubmission Fee
- \$ \_\_\_\_\_ Definitive Application Fee, where a Preliminary Application was filed or Resubmission Fee
- \$ \_\_\_\_\_ Inspection Fee
- \$ 170 Total

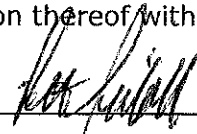
**Certifications:**

**1 The undersigned hereby certifies:**

- a That the applicant has submitted sixteen complete copies of this application and all attachments have been enclosed each in one envelope, have been delivered to the Community Development Department, and have been marked, all as stipulated in Section 3.5.1.2 paragraphs a through f of the Rules and Regulations Governing the Subdivision of Land in Reading.
- b That the applicant has complied with the stipulations contained in Sections 3.5.2 3.5.3 and 3.5.4 of the Rules and Regulations Governing the Subdivision of Land in Reading.

**2 That the applicant understands and agrees:**

- a That in addition to all other fees and charges specified herein, if the Commission in the course of review of an application, determines at its sole and absolute discretion that review of all or any part of a proposed project by (an) outside independent consultant(s) of the Commission's sole choosing is necessary for proper evaluation of the proposed project or its possible effects on any matter of public interest, then the applicant shall provide immediately to the Town, by way of the Town Planner, (a) certified check(s) payable to such consultant(s) in an amount equal to the estimated cost of the relevant services of such consultant(s), and that no Building Permit or Certificate of Occupancy shall be issued for said project until all such fees that may be so imposed have been paid in full.
- b That before CPDC may act on an application filed pursuant to these Regulations, CPDC or the Town Planner shall first determine whether the application is complete and properly submitted; that in order for an application to be considered by CPDC to be complete and properly submitted, the provisions of the submission requirements and the plan form and contents requirements contained herein shall be fully complied with; and that if an application is determined not to be complete or not to be a proper submittal, it shall be denied without need of a public hearing;
- c That if additional material as required herein or a request for a waiver is submitted after the original date of filing of the application, it shall not be considered by CPDC as part of the application nor shall it be considered as material perfecting the completeness of the application, unless it is accompanied by Form D, filed with CPDC and the Town Clerk, signed by the applicant agreeing and acknowledging that the date of submission of such additional material shall supersede the original date of filing for purposes of determining the date by which CPDC must take action and make notification thereof with respect to the application.

Applicant's Signature:  Date: 1/5/2023

=====

This Application is authorized for filing with the Town Clerk:

CPDC: \_\_\_\_\_ Date: \_\_\_\_\_  
 Director of Community Development



TOWN OF READING MASSACHUSETTS  
COMMUNITY PLANNING AND DEVELOPMENT COMMISSION  
REQUEST FOR CERTIFIED ABUTTERS LIST  
**Form C**

**Subject Property:**

Address: 0 Annette Lane  
Assessors' Map: 38 Lot(s): 139

**Applicant:**

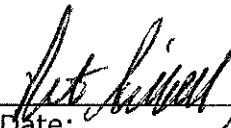
Name: Peter Seibold  
Address: 437 Summer Avenue, Reading, MA  
Telephone: 978-375-7326

**Board or Commission for which this request is made (check all that are applicable):**

Zoning Board of Appeals:  
 Variance  
 Special Permit  
 Appeal

Community Planning and Development Commission:  
 Site Plan Review  
 Special Permit  
 Subdivision

Conservation Commission:  
 Request for Determination  
 Notice of Intent

Applicant's Signature:   
Date: 1/5/2023

NOTE: The Assessors' Office will need three weeks in order to process and approve this request

=====

Request Authorized:

Signature: \_\_\_\_\_ Date: \_\_\_\_\_  
Director of Community Development

---

*Vineyard Engineering & Environmental Services, Inc.*

Land Survey, Civil Engineering and Environmental Services  
Offices in Medford and Vineyard Haven, Massachusetts  
[www.vineyardeng.com](http://www.vineyardeng.com)

---

January 5, 2023

Julie Mercier, Community Development Director  
Planning Division  
Town of Reading, MA 01867

**RE: Requested Waivers – Preliminary Subdivision  
Proposed Development of 0 Annette Lane, Reading, MA  
Tax Map 38 Parcel 139**

---

Dear Ms. Mercier,

On behalf of Mr. Peter Seibold (the Applicant), Vineyard Engineering & Environmental Services, Inc. (Vineyard) of Medford, Massachusetts is submitting the following list of Waivers for development of the property at 0 Annette Lane in Reading, Massachusetts (Tax Map 38 Parcel 139). The property is identified as Parcel 139 on The Town of Reading Assessor's Map 38. As shown on plans prepared by Vineyard, the property is a vacant lot located at the western end of Annette Lane. Proposed development includes subdivision of the existing parcel to create a lot for construction of a single-family home and a second lot for the extension of the layout of Annette Lane to create the required amount of lot frontage. As part of the development, the Applicant is requesting waivers from the Town of Reading Subdivision Rules and Regulations.

### **REQUESTED WAIVERS**

From the Town of Reading Subdivision Rules & Regulation:

1. Section 5.1.1 (b)(8) Requires topography be shown with 100 feet of locus. The applicant requests that the topography be limited to the site locus and Annette Lane at the roadway as the topography on the properties will not significantly change.
2. Section 6.1.1.(c)(3) Requires existing and proposed profile of the roadway. The applicant is proposing to extend the paved roadway of Annette Lane by 30 feet. Due to the limited scope of the project and because the remainder of the road will remain a paper road, the Applicant requests a Waiver of the requirement.
3. Section 6.1.1.d.3 Requires a full traffic report/study. Due to the limited scope of the project and the increase in traffic to the area from one additional home, the Applicant requests relief from the requirement to provide a traffic study.

---

17 Salem Street  
Medford, MA 02155  
Phone: 781.933.3330  
Fax: 781.933.3334

---

Martha's Vineyard  
P.O. Box 458  
Tisbury, MA 02568  
508.687.9437

4. Section 6.1.1.4 Requires an environmental impact report. Due to the limited scope of the project and the minimal impact from one additional home on Town resources, the Applicant requests relief from the requirement to provide an environmental impact report.

5. Section 6.1.1.d.5 Requires test borings be completed to determine that materials are suitable for roadway construction. The development proposes extending the paved roadway of Annette Lane by 30 feet. Accordingly, the Applicant requests relief from the requirement for soils determination for the roadway.

6. Section 7.1.7 Requires granite curbing be installed. Due to the limited scope of the project and the absence of existing curbing on Annette Lane, the Applicant requests a Waiver of the requirement.

7. Section 7.1.8 Requires the installation of granite monuments. granite curbing be installed. Due to the limited scope of the project and because the remainder of the road will remain a paper road, the Applicant requests a Waiver of the requirement.

8. Section 7.1.1 Requires installation of bituminous concrete. Due to the limited scope of the project and the paved right of way will only be extended approximately 30 feet, the Applicant requests a Waiver of the requirement.

9. Section 7.1.1(a) Requires a right of way of width of 60 feet. The existing layout of Annette Lane is 50 feet wide. As such, the applicant is requesting relief from this requirement to extend the layout of Annette Lane at the existing 50-foot width.

10. Section 7.1.11 Requires Street lighting. Due to the limited scope of the project and the paved right of way will only be extended approximately 30 feet, the Applicant requests a Waiver of the requirement.

11. Section 7.6.1 Requires installation of bituminous concrete. The existing layout of Annette Lane is 50 feet wide. As such, the applicant is requesting relief from this requirement to extend the layout of Annette Lane at the existing 50-foot width.

12. Section 8.0 Requires construction of a way. Due to the limited scope of the project and the presence of wetlands in the area in which a way would be constructed, the Applicant requests a Waiver of the requirement.

If you have any questions, please feel free to contact this office.

Sincerely,



Andrew C. Pandolph  
President  
Vineyard Engineering and Environmental Services Inc



TOWN OF READING MASSACHUSETTS  
COMMUNITY PLANNING AND DEVELOPMENT COMMISSION  
DESIGNER'S CERTIFICATE  
**Form G**

Date: 1/5/2023

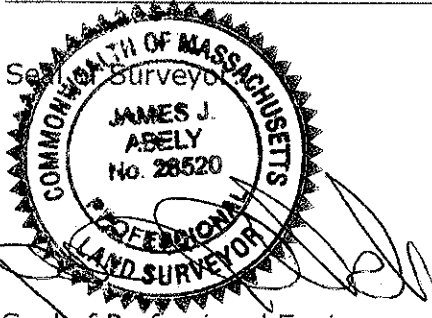
To the Community Planning and Development Commission:

In preparing the plan entitled Preliminary Subdivision Plan  
and dated January 3, 2023, I hereby certify that the above named plan and  
accompanying data is true and correct, to the accuracy required by the current Rules and  
Regulations Governing the Subdivision of Land in Reading, Massachusetts, and required by  
the Rules of the Massachusetts Registry of Deeds and my source of information about the  
location of boundaries shown on said plan were one or more of the following:

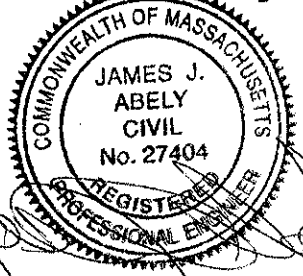
1 Deed from James Pacy Jr. to Peter Seibold  
dated 9/27/1999 and recorded in the Middlesex South Registry of  
Deeds Book 30698, Page 582

2 Actual measures on the ground from a starting point established by  
Stone bound drill hole at the intersection of Annette Lane and Martin Road.

3 Other deeds, plans and / or sources as follows:  
Plan No. 1478 of 1985  
Plan No. 640 of 1967



Seal of Professional Engineer:



Signed:  
Name and Address:

James J. Abely  
17 Salem Street  
Medford, MA 02155  
Phone: 781-933-3330

Signed:  
Name and Address:

James J. Abely  
17 Salem Street  
Medford, MA 02155  
Phone: 781-933-3330