# NEW W. EDWARD BALMER ELEMENTARY SCHOOL

TOWN OF NORTHBRIDGE, MASSACHUSETTS

# PLANNING BOARD SUBMISSION

## APRIL 9, 2019


DORE & WHITTIER ARCHITECTS, INC.

260 Merrimac St. Bldg. 7, 2nd Floor
Newburyport, Massachusetts 01950

Phone: 978-499-2999

212 Battery Street
Burlington, Vermont 05401

Phone: 802.863.1428
www.doreandwhittier.com

SMMA

Project Management

1000 Massachusetts Avenue
Cambridge, Massachusetts 02138

Phone: 617.547.5400
www.smma.com

DORE & WHITTIER
ARCHITECTS, INC.

April 9, 2019

Mr. R. Gary Bechtholdt II, Town Planner
Town of Northbridge
Aldrich School Town Hall Annex
14 Hill Street
Whitinsville, MA 01588

RE: **W. Edward Balmer Elementary School – Planning Board Submission**

Dear Gary,

Please accept this submission to the Planning Board for the New Balmer Elementary School project, attached and delivered on this date. The project includes construction of a new Grades PK-5 elementary school on the site of the existing Balmer school, which will also involve the Vail Field parcel as part of the project.

We have attached our previously submitted Zoning Bylaws analysis, which provides some relevant information for the Planning Board. In addition, we have isolated some items of information requested in the Bylaws section 173-49.1.E submission requirements that may not be included or easily inferred from the attached drawings, as follows:

(2)(e) The proposed school building is 167,352 gross square feet (GSF) in size.

(2)(h) The School Building Committee has proposed an electronic programmable LED sign at the front entrance of the school. It is intended to be mounted on (or recessed within) the masonry gateway shown on the site plan. A conceptual elevation drawing is attached. We are aware of the sign ordinance in the residential district, but would submit that a 12 SF internally lit, non-animated, white LED sign communicating activities and upcoming events at the school is both reasonable and essential for the school's function, and would not place an undue burden on neighbors.

(2)(k) Estimated earthwork is as follows:

Phase I (New Building Construction) Bulk Grade Cut: 21,850 CY; Bulk Grade Fill: 14,000 CY.

Phase II (West Parking Lot Construction) Bulk Grade Cut: 8,650 CY; Bulk Grade Fill: 1,420 CY.

(2)(p)[1] Traffic Impact Report, by Nitsch Engineering, dated January 26, 2018, attached. The report body is included; however, the appendix of some 163 pages containing the raw traffic count data is not, but is available upon request.

For the remainder of (2)(p) [2-4] we would submit that these items are either covered under the Conservation Commission application or not germane to this public building project and should be waived for this application.

ARCHITECTS
PROJECT MANAGERS

260 Merrimac Street Bldg 7
Newburyport, MA 01950
978.499.2999 ph
978.499.2944 fax

212 Battery Street
Burlington, VT 05401
802.863.1428 ph
802.863.6955

www.doreandwhittier.com

Please contact me if you have any question on the above material, or require anything further. We look forward to working with you to continue the permitting process for this project.

Sincerely,

**DORE & WHITTIER ARCHITECTS, INC.**
Architects ▪ Project Managers

Tom Hengelsberg, AIA
Project Manager

Attachments

**cc:** File

# Table of Contents

## SITE PLAN REVIEW

April 9 , 2019

Applicant: Dore & Whittier Architects, Inc.

Address: 260 Merrimac Street, Building 7, Newburyport, MA 01950

*To the Planning Board of the Town of Northbridge*

The undersigned, being the applicant for approval of a site plan shown on a plan entitled: "Planning Board Submission Package for the New W. Edward Balmer School"

designed by Dore & Whittier Architects/ Nitsch Engineering/ Horiuchi & Solien Landscape Architects, dated April 9, 2019 and described as follows:

A plan showing ______

Civil Engineering: Demolition Plans, Roadway Layout Plans, Road Signage and Striping Plans, Building Location Plans, Site Grading Plans, Site Utility Plans, Site Drainage Plans, Selected Civil Engineering Profiles and Details.

Landscape Architecture: Overall Site Plan, Layout and Materials Plan and Enlargements, Planting Plans, Landscape Details.

Architectural: Building Elevations with materials called out, Colored 3-D Renderings, Signage Details

Electrical Engineering: Electrical Site Plan & Details, Exterior Lighting Fixture Cut Sheets

Location: 21 Crescent Street, Whitinsville, MA 01588

Total acreage of tract: 30.08 acres (+-)

Total square footage of gross floor area proposed: 167,352 GSF

The project is a new structure or group of structures: Not Applicable **X**____Yes ______No

This project is an improvement, alteration, or addition to existing structures:____Yes **X**_____No Not Applicable

Said applicant hereby submits said site plan in accordance with the Northbridge Zoning By-law Article X §173-49.1 for approval of said site plan.

The undersigned's title to said land is derived from Whitin Machine Works by deed dated April 24, 1963 and recorded in the Worcester South County District Registry of Deeds Book 4369, Page 342, registered in the N/A County Registry District of the Land Court, Certificate of Title No. N/A.

Applicant's Signature: [signature] Date: 4/9/2019

Applicant's Address: Dore & Whittier Architects, Inc., 260 Merrimac Street, Building 7, Newburyport, MA 01950

Applicant's Telephone: 978-499-2999

Owner's Signature: [signature] Date: 4.9.2019

Owner's Address: Town of Northbridge (for Northbridge Public Schools), 7 Main Street, Whitinsville, MA 01588

Owner's Telephone: 508-234-2095 (NPS - 508-234-8156)

Applicant's Authorization if not the owner: __________

**Received by the Town Clerk:**

**Date:**__________

**Time:**__________

**Signature:**__________

NORTHBRIDGE PLANNING BOARD

FORM C-4

## CERTIFIED LIST OF ABUTTERS
## SITE PLAN REVIEW

April 9, , 2019

**Instructions**

The abutters list shall be prepared by the applicant and submitted to the assessor's office for certification.

Attach a copy or sketch of the most current assessor's plat showing the land described in this petition and the abutting parcels within **three hundred feet (300').** Each parcel shall be numbered in accordance with the assessor's records.

Attach the completed list of the owners, from the most recent tax list, of each abutting parcel within **three hundred feet (300')** of a property line of the proposed subdivision.

**Plan Identification**

Project Name: New W. Edward Balmer Elementary School

Address of Project: 21 Crescent Street, Whitinsville, MA 01588

Map and Parcel No. Lot ID 7-138

Applicant: Dore & Whittier Architects, Inc.

Address: 212 Battery Street, Burlington, VT 05401

Telephone: 802-863-1428

Owner: Town of Northbridge (for Northbridge Public Schools)

Address: 7 Main Street, Whitinsville, MA 01588

Telephone: 508-234-2095 (NPS - 508-234-8156)

**This is to certify that at the time of the last assessment for taxation made by the Town of Northbridge, the names and addresses of the parties assessed as adjoining owners to the parcel of land shown are written. This list is assumed to be complete to the best of our knowledge and belief.**

Jeff Ceceri

**Assessor's Office**

4-11-19

**Date**

# ABBUTTERS LISTING
# NORTHBRIDGE, MA

| Map | Block | Lot | Unit | Owner~s Name | Co Owner~s Name | Address | City | ST Zip | Parcel Location |
|---|---|---|---|---|---|---|---|---|---|
| 6 | 1 | | | CHILTON KENDELL A | | 125 BROOKWAY DR | NORTHBRIDGE | MA 01534 | 255 NO MAIN ST |
| 6 | 2 | | | GUO BINGZHU | | 125 BROOKWAY DR | NORTHBRIDGE | MA 01534 | 261 NO MAIN ST |
| 6 | 3 | | | YOUNGSMA ALVIN H TR | MARY L YOUNGSMA TR | 269 NO MAIN ST | WHITINSVILLE | MA 01588 | 269 NO MAIN ST |
| 6 | 4 | | | MONTECALVO JOSEPH J | MARGARET B MONTECALVO | 279 NO MAIN ST | WHITINSVILLE | MA 01588 | 279 NO MAIN ST |
| 6 | 33 | | | TOWN OF NORTHBRIDGE | | N/A | NORTHBRIDGE | MA 01534 | LAKE ST |
| 6 | 34 | | | K T K M REALTY TRUST | | 611 LINCOLN ST | FRANKLIN | MA 02038 | 24-34 CRESCENT ST |
| 7 | 32 | | | CONNOLLY JOHN C | KAREN J CONNOLLY | 97 TRACEY DRIVE | WHITINSVILLE | MA 01588 | 97 TRACEY DR |
| 7 | 33 | | | O'DONNELL GLENN E | DONNA O'DONNELL | 89 MASON RD | WHITINSVILLE | MA 01588 | 89 MASON RD |
| 7 | 74 | | | LAYDON JOSEPH T | CHRISTINA P LAYDON | 63 MASON RD | WHITINSVILLE | MA 01588 | 63 MASON RD |
| 7 | 75 | | | CIOFFI ALFRED | CYNTHIA CIOFFI | 82 MASON RD | WHITINSVILLE | MA 01588 | 82 MASON RD |
| 7 | 76 | | | KELLY SUSAN A | SEAN J KELLY | 70 MASON RD | WHITINSVILLE | MA 01588 | 70 MASON RD |
| 7 | 77 | | | PIXLEY GERALD W | SUSAN M PIXLEY, TE | 56 MASON RD | WHITINSVILLE | MA 01588 | 56 MASON RD |
| 7 | 78 | | | HEFFERNAN TIMOTHY M | JACQUELYN M LYONS-HEFFERNAN | 48 MASON RD | WHITINSVILLE | MA 01588 | 48 MASON RD |
| 7 | 105 | | | NAU LURANA M | | 66 FAIRLAWN ST | WHITINSVILLE | MA 01588 | 66 FAIRLAWN ST |
| 7 | 106 | | | DAWSON MICHAEL J | C/O TOBIAS M CONIO | 60 FAIRLAWN ST | WHITINSVILLE | MA 01588 | 60 FAIRLAWN ST |
| 7 | 107 | | | BAXENDALE JAMES F TRUSTEE | BAXENDALE REALTY TRUST | 52 FAIRLAWN ST | WHITINSVILLE | MA 01588 | 52 FAIRLAWN ST |
| 7 | 109 | | | THIBODEAU RITA P, LE | M STOCKHAUS, L SOHIGIAN, S KURAS, T | 34 FAIRLAWN ST | WHITINSVILLE | MA 01588 | 34 FAIRLAWN ST |
| 7 | 110 | | | MARSHALL BRIAN | LYNN MARSHALL | 26 FAIRLAWN ST | WHITINSVILLE | MA 01588 | 26 FAIRLAWN ST |
| 7 | 111 | | | WHITAKER CHRISTINA A | | 20 FAIRLAWN ST | WHITINSVILLE | MA 01588 | 20 FAIRLAWN ST |
| 7 | 113 | | | CAMPBELL JESSICA L | JONATHON S CAMPBELL TE | 352 NO MAIN ST | WHITINSVILLE | MA 01588 | 352 NO MAIN ST |
| 7 | 115 | | | TAYLOR JOSEPH R | C/O JOSEPH R TAYLOR TRUSTEE | 344 NO MAIN ST | WHITINSVILLE | MA 01588 | 344 NO MAIN ST |
| 7 | 116 | | | KUINDERSMA MARK | DIANE M BEAULIEU, JT | 70 FAIRLAWN ST | WHITINSVILLE | MA 01588 | 70 FAIRLAWN ST |
| 7 | 117 | | | POULIOT JEANNETTE L | BRAIN G POULIOT, TC | 330-332 NO MAIN ST | WHITINSVILLE | MA 01588 | 330-332 NO MAIN ST |
| 7 | 118 | | | BEDIGIAN JAMES D | | 320 NO MAIN ST | WHITINSVILLE | MA 01588 | 320 NO MAIN ST |
| 7 | 119 | | | SHANNAHAN JOHN P | C/O ANDREW & ABAGAIL YANCO | 306 NO MAIN ST | WHITINSVILLE | MA 01588 | 306 NO MAIN ST |
| 7 | 120 | | | WIERSMA BERNARD TRUSTEE | B & M WIERSMA LIVING TRUST | 104 SULLIVAN DR | WHITINSVILLE | MA 01588 | 104 SULLIVAN DR |
| 7 | 121 | | | BOWMAN RONALD | NANCY BOWMAN | 82 SULLIVAN DR | WHITINSVILLE | MA 01588 | 82 SULLIVAN DR |
| 7 | 122 | | | GARRITY ROBERT M | | 74 SULLIVAN DR | WHITINSVILLE | MA 01588 | 74 SULLIVAN DR |
| 7 | 123 | | | DESPLECHIIN DAWN M | WILLIAM D ISON, JT | 64 SULLIVAN DR | WHITINSVILLE | MA 01588 | 64 SULLIVAN DR |
| 7 | 124 | | | GILE CARROLL G | C/O JOCELYN L ARN | 56 SULLIVAN DR | WHITINSVILLE | MA 01588 | 56 SULLIVAN DR |
| 7 | 125 | | | DOBELBOWER JAKE | ASHLEY L DOBELBOWER | 48 SULLIVAN DR | WHITINSVILLE | MA 01588 | 48 SULLIVAN DR |
| 7 | 126 | | | BROWN MICHAEL L | | 38 SULLIVAN DR | WHITINSVILLE | MA 01588 | 38 SULLIVAN DR |
| 7 | 127 | | | POWERS EILEEN | NANCY A & THOMAS P POWERS, JT | 25 SULLIVAN DR | WHITINSVILLE | MA 01588 | SULLIVAN DR |
| 7 | 128 | | | POWERS EILEEN | NANCY A & THOMAS P POWERS, JT | 25 SULLIVAN DR | WHITINSVILLE | MA 01588 | 25 SULLIVAN DR |
| 7 | 130 | | | FREMEAU MARK J | LYNNE VALLEY FREMEAU | 270 NO MAIN ST | WHITINSVILLE | MA 01588 | 270 NO MAIN ST |
| 7 | 131 | | | OSIECKI DIANE C LIFE ESTATE | LAURIE A CIRAS | 278 NO MAIN ST | WHITINSVILLE | MA 01588 | 278 NO MAIN ST |
| 7 | 132 | | | BRIAND MAUREEN E TRUSTEE FEEN FAM T | | 89 SULLIVAN DR | WHITINSVILLE | MA 01588 | 89 SULLIVAN DR |
| 7 | 133 | | | ZAWIERUSZYNSKI MARYANN P | MICHAEL ZAWIERUSZYNSKI | 296 NO MAIN ST | WHITINSVILLE | MA 01588 | 296 NO MAIN ST |
| 7 | 134 | | | FORNACIARI ANTHONY M | C/O MEGHAN M WINCHELL & SUSAN BURBU | 286 NO MAIN ST | WHITINSVILLE | MA 01588 | 286 NO MAIN ST |
| 7 | 135 | | | POULIOT MICHAEL J | ANALIEZEL POULOIT, TE | 264 NO MAIN ST | WHITINSVILLE | MA 01588 | 264 NO MAIN ST |
| 7 | 136 | | | FLAHERTY MATTHEW T | | 256 NO MAIN ST | WHITINSVILLE | MA 01588 | 256 NO MAIN ST |
| 7 | 137 | | | BALL JASON ANDREW | C/O JASON BALL & DONNA EVANS | 246 NO MAIN ST | WHITINSVILLE | MA 01588 | 246 NO MAIN ST |
| 7 | 138 | | | TOWN OF NORTHBRIDGE | | W E BALMER SCHOOL | WHITINSVILLE | MA 01588 | 11 CRESCENT ST |
| 7 | 142 | | | MAHONEY NOMINEE TRUST | C/O PATRICK H & ELAINE L MAHONEY | 2900 PROVIDENCE RD N | NORTHBRIDGE | MA 01534 | 45-55 CRESCENT ST |
| 7 | 146 | | | LEGERE PROPERTIES LLC | JOHN R LEGERE JR | 1 CRESTVIEW DR | UXBRIDGE | MA 01569 | 44-54 CRESCENT ST |
| 7 | 147 | | | BELLI HEATHER | MICHAEL ALDEN, JT | 56 LAKE ST | WHITINSVILLE | MA 01588 | 56 LAKE ST |

## ABBUTTERS LISTING
## NORTHBRIDGE, MA

| Map | Block | Lot | Unit | Owner~s Name | Co Owner~s Name | Address | City | ST Zip | Parcel Location |
|---|---|---|---|---|---|---|---|---|---|
| 7 | 287 | | | AUSTIN LUKE C TE | HOLLY L AUSTIN TE | 325 SWIFT RD | WHITINSVILLE | MA 01588 | 325 SWIFT RD |
| 7 | 288 | | | COLLINS RUSSELL D | KATHLEEN Y COLLINS | 292 MASON RD | WHITINSVILLE | MA 01588 | 292 MASON RD |
| 7 | 289 | | | CHAGNON IRREVOCABLE FAMILY TRUST | PAUL CHAGNON/DENISE ZECCO,TRUSTEE | 282 MASON RD | WHITINSVILLE | MA 01588 | 282 MASON RD |
| 7 | 290 | | | CRAIG FRANCINE | C/O A PEREZ & K RIVERA | 266 MASON RD | WHITINSIVLLE | MA 01588 | 266 MASON RD |
| 7 | 291 | | | ZANELLA PATRICK T | TARA A ZANELLA | 254 MASON RD | WHITINSVILLE | MA 01588 | 254 MASON RD |
| 7 | 292 | | | VALIS DAVID O | LINDA M VALIS | 244 MASON RD | WHITINSVILLE | MA 01588 | 244 MASON RD |
| 7 | 293 | | | BARIS CHARLES R | CATHERINE F BARIS | 230 MASON RD | WHITINSVILLE | MA 01588 | 230 MASON RD |
| 7 | 294 | | | COURTEMANCHE JOHN | JACQUELINE C COURTEMANCHE | 216 MASON RD | WHITINSVILLE | MA 01588 | 216 MASON RD |
| 7 | 295 | | | ARMSTRONG JOHN A | MARY L ARMSTRONG | PO BOX 172 | WHITINSVILLE | MA 01588 | 202 MASON RD |
| 7 | 296 | | | BIGNESS KYLE | KERI L BIGNESS | 192 MASON RD | WHITINSVILLE | MA 01588 | 192 MASON RD |
| 7 | 297 | | | BROOKS JOHN LEROY | | 178 MASON RD | WHITINSVILLE | MA 01588 | 178 MASON RD |
| 7 | 298 | | | STOCKWELL EDWARD R SR | MARGARET B STOCKWELL, TE | 168 MASON RD | WHITINSVILLE | MA 01588 | 168 MASON RD |
| 7 | 299 | | | KELLEHER SEAN D | C/O JEREMY HARRIS/LESLIE R COSGRO | 156 MASON RD | WHITINSVILLE | MA 01588 | 156 MASON RD |
| 7 | 300 | | | KOUREY NICHOLAS W | C/O SCOTT & SAMANTHA MURDOUGH | 146 MASON RD | WHITINSVILLE | MA 01588 | 146 MASON RD |
| 7 | 301 | | | GUGLIELMO KENNETH R | MARIA A GUGLIELMO | 138 MASON RD | WHITINSVILLE | MA 01588 | 138 MASON RD |
| 7 | 302 | | | GAMBON THOMAS M | | 130 MASON RD | WHITINSIVLLE | MA 01588 | 130 MASON RD |
| 7 | 303 | | | SULLIVAN BRIAN J | | 68 EVERGREEN CR | WHITINSVILLE | MA 01588 | 68 EVERGREEN CR |
| 7 | 304 | | | FORTIN LIVING TRUST | DENNIS J & BARBARA J FORTIN, TRUSTE | 56 EVERGREEN CR | NORTHBRIDGE | MA 01588 | 56 EVERGREEN CR |
| 7 | 306 | | | HAY CRAIG D | MARY E HAY,TE | 32 EVERGREEN CR | WHITINSVILLE | MA 01588 | 32 EVERGREEN CR |
| 7 | 307 | | | CAHALANE JONATHAN V | DENISE E CAHALANE | 20 EVERGREEN CR | WHITINSVILLE | MA 01588 | 20 EVERGREEN CR |
| 7 | 308 | | | NEWELL KENNETH S | BRENDA L NEWELL | 19 EVERGREEN CR | WHITINSVILLE | MA 01588 | 19 EVERGREEN CR |
| 7 | 309 | | | HAWKES CHARLES B | KRISTINE B HAWKES | 126 FAIRLAWN ST | WHITINSVILLE | MA 01588 | 126 FAIRLAWN ST |
| 7 | 310 | | | FROMENT KRISTINE A | DAVID MA FROMENT,TE | 31 EVERGREEN CR | WHITINSVILLE | MA 01588 | 31 EVERGREEN CR |
| 7 | 311 | | | MALONE MICHAEL P | MELISSA A MALONE | 41 EVERGREEN CR | WHITINSVILLE | MA 01588 | 41 EVERGREEN CR |
| 7 | 312 | | | COGLIANDRO PAUL D | SUSAN M. COGLIANDRO | 53 EVERGREEN CIR | WHITINSVILLE | MA 01588 | 53 EVERGREEN CR |
| 7 | 313 | | | TOWN OF NORTHBRIDGE | | N/A | WHITINSVILLE | MA 01588 | EVERGREEN CR |
| 7 | 314 | | | PILEGGI MARK & DAVID PILEGGI JR. TR | C/O PILEGGI IRREVOCABLE TRUST | 65 EVERGREEN CR | WHITINSVILLE | MA 01588 | 65 EVERGREEN CR |
| 7 | 315 | | | VITAGLIANO ROBERT | ELISABETH VITAGLIANO | 94 MASON RD | WHITINSVILLE | MA 01588 | 94 MASON RD |
| 7 | 316 | | | PILEGGI DAVID J JR | ALISON PILEGGI, TE | 120 MASON RD | WHITINSVILLE | MA 01588 | 120 MASON RD |
| 7 | 317 | | | DEMBROWSKI STEPHEN J | MARIE A DEMBROWSKI | 103 MASON RD | WHITINSVILLE | MA 01588 | 103 MASON RD |
| 7 | 318 | | | GAY BRUCE C | MARGARET M GAY | 80 DOVER DR | WHITINSVILLE | MA 01588 | 80 DOVER DR |
| 7 | 330 | | | DER MUGRDITCHIAN MARK | CYNTHIA DER MUGRDITCHIAN | 75 DOVER DR | WHITINSVILLE | MA 01588 | 75 DOVER DR |
| 7 | 331 | | | FLEMING KEVIN J | C/O PHILIP & SARAH HANNA | 89 DOVER DR | WHITINSVILLE | MA 01588 | 89 DOVER DR |
| 7 | 332 | | | ROSSELLI ANTHONY J | C/O ANTHONY J ROSSELLI | 109 DOVER DR | WHITINSVILLE | MA 01588 | 109 DOVER DR |
| 7 | 333 | | | CRAWFORD RYAN | CARRIE CRAWFORD,TE | 115 MASON RD | WHITINSVILLE | MA 01588 | 115 MASON RD |
| 7 | 334 | | | CASEY FAMILY NOMINEE TRUST | JOHN T & LOIS A CASEY TRS | 151 MASON RD | WHITINSVILLE | MA 01588 | 151 MASON RD |
| 7 | 335 | | | SWARTZ PETER S | MARYANNE BELMONTE SWARTZ | 96 KERRY LN | WHITINSVILLE | MA 01588 | 96 KERRY LN |
| 7 | 336 | | | MIEDEMA DAVID III & KATHLEEN E, TRS | MIEDEMA FAMILY LIVING TRUST | 84 KERRY LN | WHITINSVILLE | MA 01588 | 84 KERRY LN |
| 7 | 337 | | | ROBINSON DANIEL P | | 72 KERRY LN | WHITINSVILLE | MA 01588 | 72 KERRY LN |
| 7 | 347 | | | BOL NICHOLAS P | KELLY S BOL, TE | 69 KERRY LN | WHITINSVILLE | MA 01588 | 69 KERRY LN |
| 7 | 348 | | | DURGIN WILLIAM R | LINDA F DURGIN | 81 KERRY LANE | WHITINSVILLE | MA 01588 | 81 KERRY LN |
| 7 | 349 | | | OUILLETTE DAVID J | MARYANN OUILLETTE | 93 KERRY LN | WHITINSVILLE | MA 01588 | 93 KERRY LN |
| 7 | 350 | | | BARKLEY JOHN C | BETH A BARKLEY | 175 MASON RD | WHITINSVILLE | MA 01588 | 175 MASON RD |
| 7 | 351 | | | BANNING ROBERT A | ELIZABETH A BANNING | 191 MASON RD | WHITINSVILLE | MA 01588 | 191 MASON RD |
| 7 | 352 | | | COOK BRIAN D | KATE E COOK,TE | 76 MICHAEL LN | WHITINSVILLE | MA 01588 | 76 MICHAEL LN |
| 7 | 353 | | | HENDERSON CHRISTOPHER | KAREN D HENDERSON | 64 MICHAEL LN | WHITINSVILLE | MA 01588 | 64 MICHAEL LN |

# ABBUTTERS LISTING
# NORTHBRIDGE, MA

| Map | Block | Lot | Unit | Owner~s Name | Co Owner~s Name | Address | City | ST Zip | Parcel Location |
|---|---|---|---|---|---|---|---|---|---|
| 7 | 354 | | | TOWNSEND DAVID J | JESSICA M TOWNSEND | 50 MICHAEL LN | WHITINSVILLE | MA 01588 | 50 MICHAEL LN |
| 7 | 361 | | | CALUORI MICHAEL JR | BARBARA WINSOR CALUORI | 45 MICHAEL LANE | WHITINSVILLE | MA 01588 | 45 MICHAEL LN |
| 7 | 362 | | | MUTELL ROBERT A | CAROLYN A MUTELL | 57 MICHAEL LANE | WHITINSVILLE | MA 01588 | 57 MICHAEL LN |
| 7 | 363 | | | HEDTLER ASHLEY E | SCOTT M HEDTLER | 71 MICHAEL LN | WHITINSVILLE | MA 01588 | 71 MICHAEL LN |
| 7 | 364 | | | KELLEY THOMAS A | NICOLE F KELLEY | 211 MASON RD | WHITINSVILLE | MA 01588 | 211 MASON RD |
| 7 | 365 | | | JORRITSMA RICHARD L | RIA H JORRITSMA, TE | 223 MASON RD | WHITINSVILLE | MA 01588 | 223 MASON RD |
| 7 | 366 | | | TUCKER BRANDON P | C/O MICHAEL JOSEPH LANG | 60 CANTON ST | SHARON | MA 02067 | 40 ACORN RD |
| 7 | 367 | | | WHITE MATTHEW J | KELLY A WHITE | 34 ACORN RD | WHITINSVILLE | MA 01588 | 34 ACORN RD |
| 7 | 368 | | | BROOKS AMY L | | 28 ACORN RD | WHITINSVILLE | MA 01588 | 28 ACORN RD |
| 7 | 369 | | | STEFANIAK MICHAEL J JR TE | ANNE B STEFANIAK | 22 ACORN RD | WHITINSVILLE | MA 01588 | 22 ACORN RD |
| 7 | 373 | | | PERRY STEVEN M | KATHLEEN B PERRY | 25 ACORN RD | WHITINSVILLE | MA 01588 | 25 ACORN RD |
| 7 | 374 | | | COE JAMES T | | 29 ACORN RD | WHITINSVILLE | MA 01588 | 29 ACORN RD |
| 7 | 375 | | | DUFFY SUSAN B | C/O JOSHUA & SARAH RODHE | 35 ACORN RD | WHITINSVILLE | MA 01588 | 35 ACORN RD |
| 7 | 376 | | | LESSARD VICTOR L | FRANCES M LESSARD | 251 MASON RD | WHITINSVILLE | MA 01588 | 251 MASON RD |
| 7 | 377 | | | EBBELING RONALD J | C/O STEVEN & BRIANNE SUSEL | 263 MASON RD | WHITINSVILLE | MA 01588 | 263 MASON RD |
| 7 | 378 | | | GARD GERALD I | JEAN M GARD | 277 MASON RD | WHITINSVILLE | MA 01588 | 277 MASON RD |
| 7 | 379 | | | SWEETMAN ROBERT D | JOANN SWEETMAN | 291 MASON RD | WHITINSVILLE | MA 01588 | 291 MASON RD |
| 7 | 380 | | | EDWARDS MICHAEL A | MARGARET K EDWARDS | 308 SWIFT RD | WHITINSVILLE | MA 01588 | 308 SWIFT RD |
| 7 | 381 | | | BLISS BURT J | SHERYL L BLISS | 298 SWIFT RD | WHITINSVILLE | MA 01588 | 298 SWIFT RD |
| 7 | 382 | | | GAGNON DAVID R | EDNA I GAGNON, TE | 286 SWIFT RD | WHITINSVILLE | MA 01588 | 286 SWIFT RD |
| 7 | 386 | | | ARBUCKLE PRISCILLA S | JOHN D ARBUCKLE | 82 FAIRLAWN ST | WHITINSVILLE | MA 01588 | 82 FAIRLAWN ST |
| 7 | 387 | | | MORRISSETTE PATRICIA F | | 94 SULLIVAN DR | WHITINSVILLE | MA 01588 | 94 SULLIVAN DR |
| 6A | 2 | | | BAILEY STELLA C , L.E. | C/O THOMAS & CHRISTINE SCANLON | 236 NO MAIN ST | WHITINSVILLE | MA 01588 | 236 NO MAIN ST |
| 6A | 3 | | | GONYNOR ROBERT | | 222 NO MAIN ST | WHITINSVILLE | MA 01588 | 222 NO MAIN ST |
| 6A | 4 | | | TRAN STEVE | | 2077 WISTERIA LN | MIDDLEBURG | FL 32068-5037 | 206 NO MAIN ST |
| 6A | 7 | | | ROONEY LAWRENCE | CHERRY H ROONEY | 25 WEST HILL RD | MENDON | MA 01756 | 34-44 OVERLOOK ST |
| 6A | 8 | | | CC&L PROPERTIES, LLC | GEORGE & LAURA PAPPAS | 4 BUDREAU AVE | MILLBURY | MA 01527 | 22-32 OVERLOOK ST |
| 6A | 11 | | | LORD WILLIAM J | DANIEL E LORD | 1-3 OVERLOOK ST | WHITINSVILLE | MA 01588 | 1-3 OVERLOOK ST |
| 6A | 14 | | | SOUTH MIDDLESEX NON-PROFIT | HOUSING CORPORATION | 7 BISHOP ST | FRAMINGHAM | MA 01702 | 21-31 OVERLOOK ST |
| 6A | 15 | | | SOUTH MIDDLESEX NON-PROFIT | HOUSING CORPORATION | 7 BISHOP ST | FRAMINGHAM | MA 01702 | 33-43 OVERLOOK ST |
| 6A | 16 | | | CARROLL DAVID JR | MICHELLE A CARROLL | PO BOX 333 | WHITINSVILLE | MA 01588 | 182-184 NO MAIN ST |
| 6A | 19 | | | BAKER GREGORY | HEATHER BAKER, TE | 150 NO MAIN ST | WHITINSVILLE | MA 01588 | 150 NO MAIN ST |
| 6A | 21 | | | HUMPHREY BRANDEN J | SHARON R HUMPHREY, TE | PO BOX 467 | GOFFSTOWN | NH 03045 | 108-112 NO MAIN ST |
| 6A | 22 | | | MELLO PAUL J, SR | DONNA MELLO, TE | 1-3 CRESCENT ST | WHITINSVILLE | MA 01588 | 1-3 CRESCENT ST |
| 6A | 23 | | | KENT RONALD R | DAVIDE E TREMBLAY,TE | 5-7 CRESCENT ST | WHITINSVILLE | MA 01588 | 5-7 CRESCENT ST |
| 6A | 24 | | | MAYER CHRISTOPHER J | JULIE LAPLANTE | 18-22 CRESCENT ST | WHITINSVILLE | MA 01588 | 18-22 CRESCENT ST |
| 6A | 25 | | | HAGGERTY RICHARD R | C/O MICHAEL RAAD & KELLY ROYCE | 14-16 CRESCENT ST | WHITINSVILLE | MA 01588 | 14-16 CRESCENT ST |
| 6A | 26 | | | GUIOU DIANE | | 10-12 CRESCENT ST | WHITINSVILLE | MA 01588 | 10-12 CRESCENT ST |
| 6A | 27 | | | KAMISHLIAN NICOLE | C/O STEVEN LLOYD DEARBORN | 6-8 CRESCENT ST | WHITINSVILLE | MA 01588 | 6-8 CRESCENT ST |
| 6A | 28 | | | THARSILLE, LLC | | P O BOX 341 | MANCHAUG | MA 01526 | 2-4 ARCADE ST |
| 6A | 36 | | | BEAUDOIN HARRIET | MICHAEL BONET & NATASHA SANTORO,TC | 5 ARCADE ST | WHITINSVILLE | MA 01588 | 5-7 ARCADE ST |
| 6A | 37 | | | PLANT BRIAN | COLLEEN M PLANT, TE | 1 ARCADE ST | WHITINSVILLE | MA 01588 | 1-3 ARCADE ST |
| 6A | 38 | | | MCLAUGHLIN NANCY A | COLLEEN M MCLAUGHLIN | 4 CRESCENT STREET | WHITINSVILLE | MA 01588 | 2-4 CRESCENT ST |
| 6A | 39 | | | OIKLE ARNOLD L | CAROL LEE OIKLE | 329 HAZEL ST | UXBRIDGE | MA 01569 | 96-98 NO MAIN ST |
| 6A | 40 | | | WHITE RONALD L | KATHLEEN A WHITE | 88 NO MAIN ST | WHITINSVILLE | MA 01588 | 86 NO MAIN ST |
| 6A | 123 | | | DROSIDIS KONSTANTINOS | ELENI DROSIDIS | 199 NO MAIN ST | WHITINSVILLE | MA 01588 | 205 NO MAIN ST |

# ABBUTTERS LISTING
# NORTHBRIDGE, MA

| Map | Block | Lot | Unit | Owner~s Name | Co Owner~s Name | Address | City | ST Zip | Parcel Location |
|---|---|---|---|---|---|---|---|---|---|
| 6A | 124 | | | TINKLENBERG JACOB K | BEVERLY R TINKLENBERG, TE | 225 NO MAIN ST | WHITINSVILLE | MA 01588 | NO MAIN ST |
| 6A | 125 | | | TINKLENBERG JACOB | BEVERLY TINKLENBERG | 225 NO MAIN ST | WHITINSVILLE | MA 01558 | 225 NO MAIN ST |
| 6A | 126 | | | NYE STEVEN R | | 233 NO MAIN ST | WHITINSVILLE | MA 01588 | 233 NO MAIN ST |
| 6A | 127 | | | CRAY BRIAN R | CRAY JULIE A | 241 NO MAIN ST | WHITINSVILLE | MA 01588 | 241 NO MAIN ST |
| 6A | 128 | | | WHITINSVILLE REDEVELOPMENT TR | SIDNEY COVICH TRUSTEE | 1 MAIN STREET | WHITINSVILLE | MA 01588 | NO MAIN ST |
| 6A | 149 | | | REINHOLT ASHLEY J | JOHNATHON WILLIAM REINHOLT TE | 18 BUNKERHILL PKWY | WEST BOYLSTON | MA 01583-2004 | 11 OVERLOOK ST |
| 6A | 150 | | | DEUTSCHE BANK NAT TRUST CO | C/O IRISH GREGOR | 546 FOWLER RD | NORTHBRIDGE | MA 01534 | 13 OVERLOOK ST |
| 6A | 151 | | | FALCIONE ROBERT J | | 15 OVERLOOK ST | WHITINSVILLE | MA 01588 | 15 OVERLOOK ST |
| 6A | 152 | | | LSF9 MASTER PARTICIPATION TRUST | US BANK TRUST, NA, TRUSTEE | C/O % RESICAP | ATLANTA | GA 30326 | 17 OVERLOOK ST |
| 6A | 153 | | | ESCOTT DONNA J | | 19 OVERLOOK ST | WHITINSVILLE | MA 01588 | 19 OVERLOOK ST |
| 6A | 161 | | | CRUZ, VICTOR RAFAEL | C/O VS CRUZ REALTY LLC | 30 KINGSTON ST | LAWRENCE | MA 01843 | 60 OVERLOOK ST |
| 6A | 162 | | | CRUZ VICTOR | C/O VS CRUZ REALTY LLC | 30 KINGSTON ST | LAWRENCE | MA 01843 | 62 OVERLOOK ST |
| 6A | 163 | | | CRUZ VICTOR | C/O VS CRUZ REALTY LLC | 30 KINGSTON ST | LAWRENCE | MA 01843 | 64 OVERLOOK ST |
| 6A | 164 | | | THE BRADY IMPACT | C/O VS CRUZ REALTY LLC | 30 KINGSTON ST | LAWRENCE | MA 01843 | 66 OVERLOOK ST |
| 6A | 165 | | | ELDRIDGE LINDA | WESLEY ELDRIDGE, TE | 70 BIRCH ST APT 3 | WORCESTER | MA 01603-2726 | 68 OVERLOOK ST |
| 6A | 178 | | | CRUZ VICTOR | C/O VS CRUZ REALTY LLC | 30 KINGSTON ST | LAWRENCE | MA 01843 | 58 OVERLOOK ST |
| 6A | 218 | | | BILLMYER MICHAEL | JANET BILLMYER, TE | 5 OVERLOOK ST | WHITINSVILLE | MA 01588 | 5 OVERLOOK ST |
| 6A | 219 | | | HADEN KYLE A | C/O TRISHA/DANIEL BEGNOCHE | 7 OVERLOOK ST | WHITINSVILLE | MA 01588 | 7 OVERLOOK ST |
| 6A | 276 | | | GADOURY HOMES LLC | | 6 RESERVOIR AVE | MANCHAUG | MA 01526 | 46 OVERLOOK ST |
| 6A | 277 | | | 46-56 OVERLOOK ST CONDOMINIUM | C/O GADOURY HOMES LLC | P O BOX 495 | MANCHAUG | MA 01526 | 48 OVERLOOK ST |
| 6A | 278 | | | 46-56 OVERLOOK ST CONDOMINIUM | C/O GADOURY HOMES LLC | P O BOX 495 | MANCHAUG | MA 01526 | 50 OVERLOOK ST |
| 6A | 279 | | | 46-56 OVERLOOK ST CONDOMINIUM | C/O GADOURY HOMES LLC | P O BOX 495 | MANCHAUG | MA 01526 | 52 OVERLOOK ST |
| 6A | 280 | | | 46-56 OVERLOOK ST CONDOMINIUM | C/O GADOURY HOMES LLC | P O BOX 495 | MANCHAUG | MA 01526 | 54 OVERLOOK ST |
| 6A | 281 | | | 46-56 OVERLOOK ST CONDOMINIUM | C/O GADOURY HOMES LLC | PO BOX 495 | MANCHAUG | MA 01526 | 56 OVERLOOK ST |

CHILTON KENDELL A
125 BROOKWAY DR
NORTHBRIDGE, MA 01534

KELLY SUSAN A
SEAN J KELLY
70 MASON RD
WHITINSVILLE, MA 01588

TAYLOR JOSEPH R
C/O JOSEPH R TAYLOR TRUSTEE
344 NO MAIN ST
WHITINSVILLE, MA 01588

GUO BINGZHU
125 BROOKWAY DR
NORTHBRIDGE, MA 01534

PIXLEY GERALD W
SUSAN M PIXLEY, TE
56 MASON RD
WHITINSVILLE, MA 01588

KUINDERSMA MARK
DIANE M BEAULIEU, JT
70 FAIRLAWN ST
WHITINSVILLE, MA 01588

YOUNGSMA ALVIN H TR
MARY L YOUNGSMA TR
269 NO MAIN ST
WHITINSVILLE, MA 01588

HEFFERNAN TIMOTHY M
JACQUELYN M LYONS-HEFFERNAN
48 MASON RD
WHITINSVILLE, MA 01588

POULIOT JEANNETTE L
BRAIN G POULIOT, TC
330-332 NO MAIN ST
WHITINSVILLE, MA 01588

MONTECALVO JOSEPH J
MARGARET B MONTECALVO
279 NO MAIN ST
WHITINSVILLE, MA 01588

NAU LURANA M
66 FAIRLAWN ST
WHITINSVILLE, MA 01588

BEDIGIAN JAMES D
320 NO MAIN ST
WHITINSVILLE, MA 01588

TOWN OF NORTHBRIDGE
N/A
NORTHBRIDGE, MA 01534

DAWSON MICHAEL J
C/O TOBIAS M CONIO
60 FAIRLAWN ST
WHITINSVILLE, MA 01588

SHANNAHAN JOHN P
C/O ANDREW & ABAGAIL YANCO
306 NO MAIN ST
WHITINSVILLE, MA 01588

K T K M REALTY TRUST
611 LINCOLN ST
FRANKLIN, MA 02038

BAXENDALE JAMES F TRUSTEE
BAXENDALE REALTY TRUST
52 FAIRLAWN ST
WHITINSVILLE, MA 01588

WIERSMA BERNARD TRUSTEE
B & M WIERSMA LIVING TRUST
104 SULLIVAN DR
WHITINSVILLE, MA 01588

CONNOLLY JOHN C
KAREN J CONNOLLY
97 TRACEY DRIVE
WHITINSVILLE, MA 01588

THIBODEAU RITA P, LE
M STOCKHAUS, L SOHIGIAN, S KURAS, T
34 FAIRLAWN ST
WHITINSVILLE, MA 01588

BOWMAN RONALD
NANCY BOWMAN
82 SULLIVAN DR
WHITINSVILLE, MA 01588

0'DONNELL GLENN E
DONNA O'DONNELL
89 MASON RD
WHITINSVILLE, MA 01588

MARSHALL BRIAN
LYNN MARSHALL
26 FAIRLAWN ST
WHITINSVILLE, MA 01588

GARRITY ROBERT M
74 SULLIVAN DR
WHITINSVILLE, MA 01588

LAYDON JOSEPH T
CHRISTINA P LAYDON
63 MASON RD
WHITINSVILLE, MA 01588

WHITAKER CHRISTINA A
20 FAIRLAWN ST
WHITINSVILLE, MA 01588

DESPLECHIIN DAWN M
WILLIAM D ISON, JT
64 SULLIVAN DR
WHITINSVILLE, MA 01588

CIOFFI ALFRED
CYNTHIA CIOFFI
82 MASON RD
WHITINSVILLE, MA 01588

CAMPBELL JESSICA L
JONATHON S CAMPBELL TE
352 NO MAIN ST
WHITINSVILLE, MA 01588

GILE CARROLL G
C/O JOCELYN L ARN
56 SULLIVAN DR
WHITINSVILLE, MA 01588

DOBELBOWER JAKE
ASHLEY L DOBELBOWER
48 SULLIVAN DR
WHITINSVILLE, MA 01588

FLAHERTY MATTHEW T
256 NO MAIN ST
WHITINSVILLE, MA 01588

ZANELLA PATRICK T
TARA A ZANELLA
254 MASON RD
WHITINSVILLE, MA 01588

BROWN MICHAEL L
38 SULLIVAN DR
WHITINSVILLE, MA 01588

BALL JASON ANDREW
C/O JASON BALL & DONNA EVANS
246 NO MAIN ST
WHITINSVILLE, MA 01588

VALIS DAVID O
LINDA M VALIS
244 MASON RD
WHITINSVILLE, MA 01588

POWERS EILEEN
NANCY A & THOMAS P POWERS, JT
25 SULLIVAN DR
WHITINSVILLE, MA 01588

TOWN OF NORTHBRIDGE
W E BALMER SCHOOL
WHITINSVILLE, MA 01588

BARIS CHARLES R
CATHERINE F BARIS
230 MASON RD
WHITINSVILLE, MA 01588

POWERS EILEEN
NANCY A & THOMAS P POWERS, JT
25 SULLIVAN DR
WHITINSVILLE, MA 01588

MAHONEY NOMINEE TRUST
C/O PATRICK H & ELAINE L MAHONEY
2900 PROVIDENCE RD N
NORTHBRIDGE, MA 01534

COURTEMANCHE JOHN
JACQUELINE C COURTEMANCHE
216 MASON RD
WHITINSVILLE, MA 01588

FREMEAU MARK J
LYNNE VALLEY FREMEAU
270 NO MAIN ST
WHITINSVILLE, MA 01588

LEGERE PROPERTIES LLC
JOHN R LEGERE JR
1 CRESTVIEW DR
UXBRIDGE, MA 01569

ARMSTRONG JOHN A
MARY L ARMSTRONG
PO BOX 172
WHITINSVILLE, MA 01588

OSIECKI DIANE C LIFE ESTATE
LAURIE A CIRAS
278 NO MAIN ST
WHITINSVILLE, MA 01588

BELLI HEATHER
MICHAEL ALDEN, JT
56 LAKE ST
WHITINSVILLE, MA 01588

BIGNESS KYLE
KERI L BIGNESS
192 MASON RD
WHITINSVILLE, MA 01588

BRIAND MAUREEN E TRUSTEE FEEN FAM
89 SULLIVAN DR
WHITINSVILLE, MA 01588

AUSTIN LUKE C TE
HOLLY L AUSTIN TE
325 SWIFT RD
WHITINSVILLE, MA 01588

BROOKS JOHN LEROY
178 MASON RD
WHITINSVILLE, MA 01588

ZAWIERUSZYNSKI MARYANN P
MICHAEL ZAWIERUSZYNSKI
296 NO MAIN ST
WHITINSVILLE, MA 01588

COLLINS RUSSELL D
KATHLEEN Y COLLINS
292 MASON RD
WHITINSVILLE, MA 01588

STOCKWELL EDWARD R SR
MARGARET B STOCKWELL, TE
168 MASON RD
WHITINSVILLE, MA 01588

FORNACIARI ANTHONY M
C/O MEGHAN M WINCHELL & SUSAN BU
286 NO MAIN ST
WHITINSVILLE, MA 01588

CHAGNON IRREVOCABLE FAMILY TRUS
PAUL CHAGNON/DENISE ZECCO,TRUSTE
282 MASON RD
WHITINSVILLE, MA 01588

KELLEHER SEAN D
C/O JEREMY HARRIS/LESLIE R COSGRO
156 MASON RD
WHITINSVILLE, MA 01588

POULIOT MICHAEL J
ANALIEZEL POULOIT, TE
264 NO MAIN ST
WHITINSVILLE, MA 01588

CRAIG FRANCINE
C/O A PEREZ & K RIVERA
266 MASON RD
WHITINSIVLLE, MA 01588

KOUREY NICHOLAS W
C/O SCOTT & SAMANTHA MURDOUGH
146 MASON RD
WHITINSVILLE, MA 01588

GUGLIELMO KENNETH R
MARIA A GUGLIELMO
138 MASON RD
WHITINSVILLE, MA 01588

GAMBON THOMAS M
130 MASON RD
WHITINSIVLLE, MA 01588

SULLIVAN BRIAN J
68 EVERGREEN CR
WHITINSVILLE, MA 01588

FORTIN LIVING TRUST
DENNIS J & BARBARA J FORTIN, TRUSTE
56 EVERGREEN CR
NORTHBRIDGE, MA 01588

HAY CRAIG D
MARY E HAY,TE
32 EVERGREEN CR
WHITINSVILLE, MA 01588

CAHALANE JONATHAN V
DENISE E CAHALANE
20 EVERGREEN CR
WHITINSVILLE, MA 01588

NEWELL KENNETH S
BRENDA L NEWELL
19 EVERGREEN CR
WHITINSVILLE, MA 01588

HAWKES CHARLES B
KRISTINE B HAWKES
126 FAIRLAWN ST
WHITINSVILLE, MA 01588

FROMENT KRISTINE A
DAVID MA FROMENT,TE
31 EVERGREEN CR
WHITINSVILLE, MA 01588

MALONE MICHAEL P
MELISSA A MALONE
41 EVERGREEN CR
WHITINSVILLE, MA 01588

COGLIANDRO PAUL D
SUSAN M. COGLIANDRO
53 EVERGREEN CIR
WHITINSVILLE, MA 01588

TOWN OF NORTHBRIDGE
N/A
WHITINSVILLE, MA 01588

PILEGGI MARK & DAVID PILEGGI JR. TRI
C/O PILEGGI IRREVOCABLE TRUST
65 EVERGREEN CR
WHITINSVILLE, MA 01588

VITAGLIANO ROBERT
ELISABETH VITAGLIANO
94 MASON RD
WHITINSVILLE, MA 01588

PILEGGI DAVID J JR
ALISON PILEGGI, TE
120 MASON RD
WHITINSVILLE, MA 01588

DEMBROWSKI STEPHEN J
MARIE A DEMBROWSKI
103 MASON RD
WHITINSVILLE, MA 01588

GAY BRUCE C
MARGARET M GAY
80 DOVER DR
WHITINSVILLE, MA 01588

DER MUGRDITCHIAN MARK
CYNTHIA DER MUGRDITCHIAN
75 DOVER DR
WHITINSVILLE, MA 01588

FLEMING KEVIN J
C/O PHILIP & SARAH HANNA
89 DOVER DR
WHITINSVILLE, MA 01588

ROSSELLI ANTHONY J
C/O ANTHONY J ROSSELLI
109 DOVER DR
WHITINSVILLE, MA 01588

CRAWFORD RYAN
CARRIE CRAWFORD,TE
115 MASON RD
WHITINSVILLE, MA 01588

CASEY FAMILY NOMINEE TRUST
JOHN T & LOIS A CASEY TRS
151 MASON RD
WHITINSVILLE, MA 01588

SWARTZ PETER S
MARYANNE BELMONTE SWARTZ
96 KERRY LN
WHITINSVILLE, MA 01588

MIEDEMA DAVID III & KATHLEEN E, TRS
MIEDEMA FAMILY LIVING TRUST
84 KERRY LN
WHITINSVILLE, MA 01588

ROBINSON DANIEL P
72 KERRY LN
WHITINSVILLE, MA 01588

BOL NICHOLAS P
KELLY S BOL, TE
69 KERRY LN
WHITINSVILLE, MA 01588

DURGIN WILLIAM R
LINDA F DURGIN
81 KERRY LANE
WHITINSVILLE, MA 01588

OUILLETTE DAVID J
MARYANN OUILLETTE
93 KERRY LN
WHITINSVILLE, MA 01588

BARKLEY JOHN C
BETH A BARKLEY
175 MASON RD
WHITINSVILLE, MA 01588

BANNING ROBERT A
ELIZABETH A BANNING
191 MASON RD
WHITINSVILLE, MA 01588

COOK BRIAN D
KATE E COOK,TE
76 MICHAEL LN
WHITINSVILLE, MA 01588

HENDERSON CHRISTOPHER
KAREN D HENDERSON
64 MICHAEL LN
WHITINSVILLE, MA 01588

TOWNSEND DAVID J
JESSICA M TOWNSEND
50 MICHAEL LN
WHITINSVILLE, MA 01588

CALUORI MICHAEL JR
BARBARA WINSOR CALUORI
45 MICHAEL LANE
WHITINSVILLE, MA 01588

MUTELL ROBERT A
CAROLYN A MUTELL
57 MICHAEL LANE
WHITINSVILLE, MA 01588

HEDTLER ASHLEY E
SCOTT M HEDTLER
71 MICHAEL LN
WHITINSVILLE, MA 01588

KELLEY THOMAS A
NICOLE F KELLEY
211 MASON RD
WHITINSVILLE, MA 01588

JORRITSMA RICHARD L
RIA H JORRITSMA, TE
223 MASON RD
WHITINSVILLE, MA 01588

TUCKER BRANDON P
C/O MICHAEL JOSEPH LANG
60 CANTON ST
SHARON, MA 02067

WHITE MATTHEW J
KELLY A WHITE
34 ACORN RD
WHITINSVILLE, MA 01588

BROOKS AMY L
28 ACORN RD
WHITINSVILLE, MA 01588

STEFANIAK MICHAEL J JR TE
ANNE B STEFANIAK
22 ACORN RD
WHITINSVILLE, MA 01588

PERRY STEVEN M
KATHLEEN B PERRY
25 ACORN RD
WHITINSVILLE, MA 01588

COE JAMES T
29 ACORN RD
WHITINSVILLE, MA 01588

DUFFY SUSAN B
C/O JOSHUA & SARAH RODHE
35 ACORN RD
WHITINSVILLE, MA 01588

LESSARD VICTOR L
FRANCES M LESSARD
251 MASON RD
WHITINSVILLE, MA 01588

EBBELING RONALD J
C/O STEVEN & BRIANNE SUSEL
263 MASON RD
WHITINSVILLE, MA 01588

GARD GERALD I
JEAN M GARD
277 MASON RD
WHITINSVILLE, MA 01588

SWEETMAN ROBERT D
JOANN SWEETMAN
291 MASON RD
WHITINSVILLE, MA 01588

EDWARDS MICHAEL A
MARGARET K EDWARDS
308 SWIFT RD
WHITINSVILLE, MA 01588

BLISS BURT J
SHERYL L BLISS
298 SWIFT RD
WHITINSVILLE, MA 01588

GAGNON DAVID R
EDNA I GAGNON, TE
286 SWIFT RD
WHITINSVILLE, MA 01588

ARBUCKLE PRISCILLA S
JOHN D ARBUCKLE
82 FAIRLAWN ST
WHITINSVILLE, MA 01588

MORRISSETTE PATRICIA F
94 SULLIVAN DR
WHITINSVILLE, MA 01588

BAILEY STELLA C , L.E.
C/O THOMAS & CHRISTINE SCANLON
236 NO MAIN ST
WHITINSVILLE, MA 01588

GONYNOR ROBERT
222 NO MAIN ST
WHITINSVILLE, MA 01588

TRAN STEVE
2077 WISTERIA LN
MIDDLEBURG, FL 32068-5037

ROONEY LAWRENCE
CHERRY H ROONEY
25 WEST HILL RD
MENDON, MA 01756

CC&L PROPERTIES, LLC
GEORGE & LAURA PAPPAS
4 BUDREAU AVE
MILLBURY, MA 01527

LORD WILLIAM J
DANIEL E LORD
1-3 OVERLOOK ST
WHITINSVILLE, MA 01588

SOUTH MIDDLESEX NON-PROFIT
HOUSING CORPORATION
7 BISHOP ST
FRAMINGHAM, MA 01702

KAMISHLIAN NICOLE
C/O STEVEN LLOYD DEARBORN
6-8 CRESCENT ST
WHITINSVILLE, MA 01588

NYE STEVEN R
233 NO MAIN ST
WHITINSVILLE, MA 01588

SOUTH MIDDLESEX NON-PROFIT
HOUSING CORPORATION
7 BISHOP ST
FRAMINGHAM, MA 01702

THARSILLE, LLC
P O BOX 341
MANCHAUG, MA 01526

CRAY BRIAN R
CRAY JULIE A
241 NO MAIN ST
WHITINSVILLE, MA 01588

CARROLL DAVID JR
MICHELLE A CARROLL
PO BOX 333
WHITINSVILLE, MA 01588

BEAUDOIN HARRIET
MICHAEL BONET & NATASHA SANTORO,
5 ARCADE ST
WHITINSVILLE, MA 01588

WHITINSVILLE REDEVELOPMENT TR
SIDNEY COVICH TRUSTEE
1 MAIN STREET
WHITINSVILLE, MA 01588

BAKER GREGORY
HEATHER BAKER, TE
150 NO MAIN ST
WHITINSVILLE, MA 01588

PLANT BRIAN
COLLEEN M PLANT, TE
1 ARCADE ST
WHITINSVILLE, MA 01588

REINHOLT ASHLEY J
JOHNATHON WILLIAM REINHOLT TE
18 BUNKERHILL PKWY
WEST BOYLSTON, MA 01583-2004

HUMPHREY BRANDEN J
SHARON R HUMPHREY, TE
PO BOX 467
210 ELM ST
GOFFSTOWN, NH 03045

MCLAUGHLIN NANCY A
COLLEEN M MCLAUGHLIN
4 CRESCENT STREET
WHITINSVILLE, MA 01588

DEUTSCHE BANK NAT TRUST CO
C/O IRISH GREGOR
546 FOWLER RD
NORTHBRIDGE, MA 01534

MELLO PAUL J, SR
DONNA MELLO, TE
1-3 CRESCENT ST
WHITINSVILLE, MA 01588

OIKLE ARNOLD L
CAROL LEE OIKLE
329 HAZEL ST
UXBRIDGE, MA 01569

FALCIONE ROBERT J
15 OVERLOOK ST
WHITINSVILLE, MA 01588

KENT RONALD R
DAVIDE E TREMBLAY,TE
5-7 CRESCENT ST
WHITINSVILLE, MA 01588

WHITE RONALD L
KATHLEEN A WHITE
88 NO MAIN ST
WHITINSVILLE, MA 01588

LSF9 MASTER PARTICIPATION TRUST
US BANK TRUST, NA, TRUSTEE
C/O % RESICAP
3630 PEACHTREE RD NE SUITE 150
ATLANTA, GA 30326

MAYER CHRISTOPHER J
JULIE LAPLANTE
18-22 CRESCENT ST
WHITINSVILLE, MA 01588

DROSIDIS KONSTANTINOS
ELENI DROSIDIS
199 NO MAIN ST
WHITINSVILLE, MA 01588

ESCOTT DONNA J
19 OVERLOOK ST
WHITINSVILLE, MA 01588

HAGGERTY RICHARD R
C/O MICHAEL RAAD & KELLY ROYCE
14-16 CRESCENT ST
WHITINSVILLE, MA 01588

TINKLENBERG JACOB K
BEVERLY R TINKLENBERG, TE
225 NO MAIN ST
WHITINSVILLE, MA 01588

CRUZ, VICTOR RAFAEL
C/O VS CRUZ REALTY LLC
30 KINGSTON ST
LAWRENCE, MA 01843

GUIOU DIANE
10-12 CRESCENT ST
WHITINSVILLE, MA 01588

TINKLENBERG JACOB
BEVERLY TINKLENBERG
225 NO MAIN ST
WHITINSVILLE, MA 01558

CRUZ VICTOR
C/O VS CRUZ REALTY LLC
30 KINGSTON ST
LAWRENCE, MA 01843

CRUZ VICTOR
C/O VS CRUZ REALTY LLC
30 KINGSTON ST
LAWRENCE, MA 01843

THE BRADY IMPACT
C/O VS CRUZ REALTY LLC
30 KINGSTON ST
LAWRENCE, MA 01843

ELDRIDGE LINDA
WESLEY ELDRIDGE, TE
70 BIRCH ST APT 3
WORCESTER, MA 01603-2726

CRUZ VICTOR
C/O VS CRUZ REALTY LLC
30 KINGSTON ST
LAWRENCE, MA 01843

BILLMYER MICHAEL
JANET BILLMYER, TE
5 OVERLOOK ST
WHITINSVILLE, MA 01588

HADEN KYLE A
C/O TRISHA/DANIEL BEGNOCHE
7 OVERLOOK ST
WHITINSVILLE, MA 01588

GADOURY HOMES LLC
6 RESERVOIR AVE
MANCHAUG, MA 01526

46-56 OVERLOOK ST CONDOMINIUM
C/O GADOURY HOMES LLC
P O BOX 495
MANCHAUG, MA 01526

46-56 OVERLOOK ST CONDOMINIUM
C/O GADOURY HOMES LLC
P O BOX 495
MANCHAUG, MA 01526

46-56 OVERLOOK ST CONDOMINIUM
C/O GADOURY HOMES LLC
P O BOX 495
9 RESERVOIR AVE
MANCHAUG, MA 01526

46-56 OVERLOOK ST CONDOMINIUM
C/O GADOURY HOMES LLC
P O BOX 495
9 RESERVOIR AVE
MANCHAUG, MA 01526

46-56 OVERLOOK ST CONDOMINIUM
C/O GADOURY HOMES LLC
PO BOX 495
0 RESERVOIR AVE
MANCHAUG, MA 01526

DORE & WHITTIER
ARCHITECTS, INC.

February 28, 2019

Mr. James Sheehan, Building Inspector
Town of Northbridge
Aldrich School Town Hall Annex
14 Hill Street
Whitinsville, MA 01588

RE: W. Edward Balmer Elementary School – Zoning Bylaws Analysis

Dear Jim,

Following is our analysis of the Northbridge Zoning Bylaws as they apply to the project to construct a new Grades PK-5 elementary school on the site of the existing Balmer school, which will also involve the Vail Field parcel as part of the project. As requested, we are showing where the project meets the requirements of the bylaws, where it does not, and the mitigating factors that will demonstrate in our professional opinion, that there will be no substantial detriment to the public good or undue burdens placed on the town if it allows the non-conforming aspects of the project to be approved by waiver or variance. This letter is not an exhaustive analysis; only portions of the Zoning Bylaw that have direct bearing on the proposed development are included here.

**I. LAND USE, VAIL FIELD**

The Town Legal Counsel, KP Law, through its deed research, has determined that Vail Field is not subject to Article 97 (Change of Use of Public Parklands) regulations (letter attached). Furthermore, all existing athletic facilities are proposed to be replaced in-kind, in a new configuration, as part of the proposed site plan.

**II. ZONING BYLAWS ANALYSIS**

173-4 ZONING MAP:

The project site sits partially in two zones. The south portion (Crescent Street frontage) including Vail Field and some portion of the school parcel sits in zone R-5. The rear portion which includes the balance of the school parcel sits in zone R-2. The majority of the new school is located in the R-2 zone, which is used below for side yard setback calculations. The site is not part of any Overlay District, and is not located in a Floodway or Flood Plain district.


*Figure 1 - Northbridge Zoning Map (partial) – May 2016, with property identified*

ARCHITECTS
PROJECT MANAGERS

260 Merrimac Street Bldg 7
Newburyport, MA 01950
978.499.2999 ph
978.499.2944 fax

212 Battery Street
Burlington, VT 05401
802.863.1428 ph
802.863.6955

www.doreandwhittier.com

173-12 USE REGULATIONS:
Community Public Educational Facilities are a permitted use in Zones R-2 and R-5. (Table 173-12, Att. 2)

173-13.2 EROSION CONTROL:
The project will be subject to MA law and guidelines for construction erosion control, and an Erosion Control Plan will be submitted to the Town as part of the construction permit process. (Table 173-18.2. C and D)

173-20 HEIGHT AND BULK REGULATIONS:

**TABLE 1: Dimensional Requirements per Zoning Bylaws (173-20 + 173 - Att. 1)**

| | Min. Lot Area (sq. ft.) | Min. Contiguous Frontage | Min. Front Yard Setback | Min. Side Yard Setback | Min. Rear Yard Setback | Max. Height in Stories | Max. Height in Feet* | Max. Total Lot Coverage (%) |
|---|---|---|---|---|---|---|---|---|
| Required R-2 | 20,000 | 100’ | 40’ | 10’ | 40’ | 2.5 | 35’ | 20% |
| Required R-5 | 5,000 | 60’ | 15’ | 8’ | 20’ | 3 | 45’ | 50% |
| | | | | | | | | |
| Existing** | 1,310,285 | 730’ | 30’ | 50’ | 310’ | 2 | 23’-6”’ | 4 % |
| Proposed New Project - Actual Measurements (Re. R-2 zone) | 1,310,285 | 730’ | 565.64’ | 384.7’ west 42.65’ east* | 307.15’ | 3 * | 44’-4” * | 5.65 % |

* “Any maximum height permitted shall not apply to a community facility provided that the side and rear yards or setbacks required in the district for the highest permitted principal structure shall be increased two feet in width for each foot by which the height of such structure exceeds the height permitted in the district.” *See calculation below.*

** Existing calculations are based on property ID: 7-138 (parcel the school building sits within.)

173-20 SIDE YARD SETBACK CALCULATION:

Exception for Community Facilities (Sec 173-20: Table Notes)
Height 43’-10” to cornice; nominally 44’-4” to average grade.

| | |
|---|---|
| R-2 Allowable Height = | 35’ |
| Proposed Height = 44’-4” | (44.33’) |
| Height Delta = | 9.33’ |
| Setback multiplier = | 2.0 |
| Added Setback | 18.66’ |
| Base Side Setback | 10’ |
| **Required Side Setback** | **28.66’** |

**Actual Side yard Setback 42.65’ at northeast corner**

173-27 OFF-STREET PARKING AND LOADING REQUIREMENTS:
For reference, the existing structure has 96 paved, striped, legitimate parking spaces, and two loading spaces adjacent to the loading dock.

Parking:
Zoning Requirement: Community Facilities - Schools: 1 space per 300 NSF (table in Sec 173-27.C)
Building NSF = 111,568 NSF

| | |
|---|---|
| Zoning Requires | 372 parking spaces |
| Desired Parking Program per District Working Group: | |
| 156 Staff + 24 Visitors | 180 spaces |
| Additional Event Parking | 89 spaces |
| Total Parking on Site Plan | 246 spaces |
| **Seeking Variance or Waiver for** | **126 spaces** |

We are submitting an “Overflow Parking Plan” that will yield an additional 54 spaces (drawing attached). This brings the total on-site parking capacity to 300 spaces.

Loading Areas:
Zoning requires 1 per 7,500 NSF + 1 per 15,000 NSF in excess (table 2 in Sec.173-27.C)
Building NSF = 111,568 NSF
Zoning requires: 8 loading spaces
Project has: 2 loading spaces
**Seeking Variance or Waiver for 6 loading spaces**

Per the request of the Technical Review Committee at our 1/ 23/19 meeting, we are submitting a verification of the school's parking needs as well as a Parking and Event Analysis which shows that there are no likely scenarios that will exceed the total onsite parking capacity. Most scenarios will easily be accommodated with the proposed 246 spaces, and the few high-capacity events will be accommodated using the Overflow plan for 300 spaces. (Documents attached)

Additional Zoning Requirements:

Proposed Parking and Loading Spaces are all on the same lot as the building served. (Sec.173-27.D.1, .2)

Proposed spaces are 9' x 18' with 24' drive aisle in lot configurations. Parallel parking spaces in the Overflow Plan are 9' x 22' with a minimum 12' drive lane accessing them. (Sec.173-27.D.3)

The proposed number of driveways accessing the public way (Crescent Street) is limited to two. (Sec.173-27.D.4)

Proposed two-way drive ways are 22 feet wide, two lanes of 11 feet. (Sec.173-27.D.5)

Loading spaces shall be 600 SF for the first 7,500 NSF and 500 SF for each additional 15,000 NSF. There are two spaces of 600 SF. The project has two proposed loading spaces of 900 SF that will accommodate a semi-trailer or straight truck. (Sec.173-27.D.9)

Handicapped parking spaces are provided in accordance with MAAB and ADA requirements. There are 8 H/C spaces on the site, where a minimum of 7 are required. (Sec.173-27.D.12; MAAB 521 CMR 23.2.1)

The balance of regulations 173-27.D 1-13 have been incorporated in the site plans.

The proposed plan includes landscaping plant materials (primarily trees to screen and shade the parking lot areas. (173-27.F.3 – (a)-(c) )

173-28 AREA, CONSTRUCTION AND LIGHTING STANDARDS

The west parking lot is approximately 100 feet and 20-30 feet down-slope from neighbors to the west. Parking lot islands feature trees which will screen the parking from views from above. It is our interpretation that solid screen walls are not required in this condition. The east parking is screened by both solid 6' stockade fencing at the property line, and dense evergreen shrubbery between the fence and the parking lots. Other provisions of this section are being complied with (D - lighting) or are not applicable (B, C). (173-28.A-D)

Please contact me if you have any question on the above material, and we look forward to continuing the permitting process for this project.

Sincerely,

**DORE & WHITTIER ARCHITECTS, INC.**
Architects ▪ Project Managers

Tom Hengelsberg, AIA
Project Manager

Attachments
**cc:** File

KP | LAW
*The Leader in Public Sector Law*

101 Arch Street, Boston, MA 02110
Tel: 617.556.0007 | Fax: 617.654.1735
**www.k-plaw.com**

August 31, 2017

**David J. Doneski**
ddoneski@k-plaw.com

Northbridge School Building Committee
Town Hall
7 Main Street
Whitinsville, MA 01588

Re: W. Edward Balmer Elementary School, Executive Office of Energy and Environmental Affairs Article 97 Land Disposition Policy

Dear Members of the School Building Committee:

I have reviewed the identified deed for the Balmer School site – deed of Whitin Machine Works to Town of Northbridge dated April 24, 1963 and recorded with the Worcester Registry of Deeds in Book 4369, Page 342. The deed conveyed 4 parcels to the Town. Parcel 1 is land on the northwesterly side of Crescent Street and the northeasterly side of North Main Street, said to contain 9.04 acres and Parcel 2 is a parcel northwesterly of Parcel 1 said to contain 21.04 acres. The copy of the deed provided by the Assessors' office includes the annotation that the land conveyed encompasses Assessors' Map 7, parcels 138 and 141. According to the Assessors' property card record for the Balmer School property, the school site has an address of 11 Crescent Street, is shown as parcel 138 on Assessors' Map 7, and contains 30.04 acres. (Assessors' Map 7 shows parcel 138 as containing 21.04 acres, with the designation "Balmer School" and parcel 141 as containing 9.04 acres.) Accordingly, it is my understanding that the school site is Parcel 1 and Parcel 2 described in the deed. (Parcel 3 is described as land on the northerly side of Plummer Road a/k/a Church Street, between Providence Road and Quaker Street, consisting of 2.51 acres; and Parcel 4 is described as land on the westerly side of Linwood Avenue, consisting of 30,014 square feet.)

The deed to the Balmer School site includes no statement of use limitations or restriction on Town use of the land. Therefore, it is my opinion that the deed does not impose a limitation that would make the site subject to Article 97 of the Amendments to the Massachusetts Constitution, which includes a prohibition against the sale or change in use of public parkland without special approval by a two-thirds roll call vote of the Legislature.

Article 97 can apply when land acquired without any use restriction is subsequently subjected to a restriction by a document recorded with the Registry of Deeds. See Smith v. City of Westfield, 90 Mass. App. Ct. 80, 82 (2016). It is my understanding that the Town is not aware of any such recorded restriction or similar action for the Balmer School site. My on-line search of Worcester Registry of Deeds records, by street – Crescent Street, did not reveal any subsequent recorded restriction.

KP | LAW



You have also informed me that a portion of the Balmer School site contains a recreational field area, known as Vail Field. In that regard, I reviewed certain votes taken at the March 12, 1963 Annual Town Meeting regarding the Town's acceptance of land from Whitin Machine Works – one parcel of approximately 6.22 acres "known as Vail Field . . . to be used for recreational purposes only" (Article 13) and one parcel of approximately 23.25 acres "adjacent to Vail Field . . . to be used as a school site only" (Article 16). Although the stated acreage for these two parcels is different from the parcel sizes reflected in the deed referenced above and the parcel sizes being carried on the Northbridge Assessors' records, it is my understanding that the votes refer to the parcels conveyed by that deed. The Vail Field designation for the smaller parcel appears to pre-exist any transfer to the Town from Whitin Machine Works. In any event, though, creation of a restriction for purposes of Article 97 of the Amendments to the Massachusetts Constitution requires an instrument recorded at the Registry of Deeds. See Mahajan v. Department. of Environmental Protection, 464 Mass. 604, 615 – 616 (2013), citing Selectmen of Hanson v. Lindsay, 444 Mass. 502 (2005). No such instrument has been identified. Accordingly, the existence of these votes, with no restrictive instrument recorded at the Registry of Deeds, does not alter the opinion that the Balmer School site is not subject to Article 97.

In accordance with the foregoing, and in response to your further question of August 28, 2017, it is my view that the so-called Vail Field portion of the site may be used for non-recreational purposes and that the other portions of the site may be used for recreational purposes.

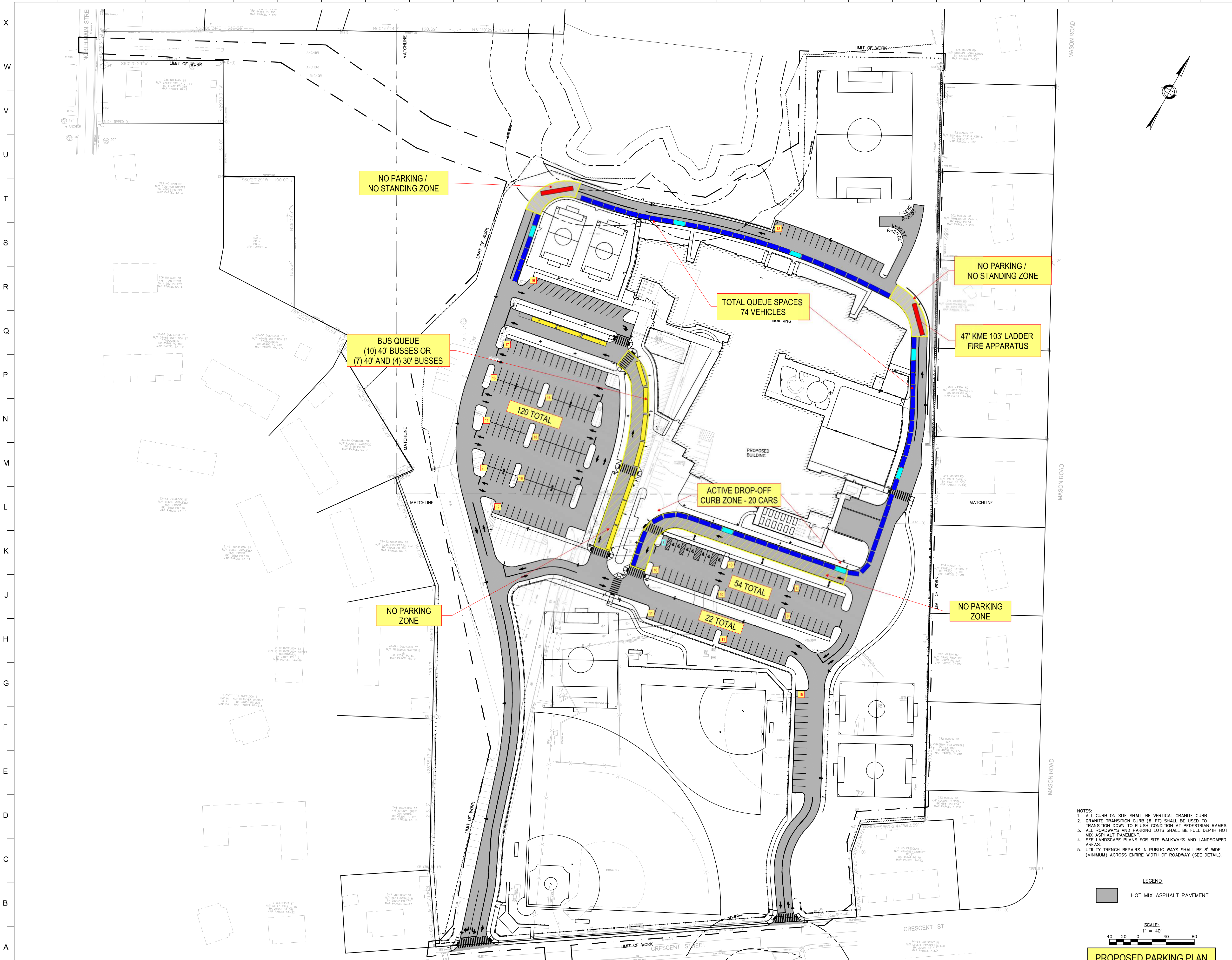
Please contact me if you have any further questions on this matter.

Very truly yours,

David J. Doneski

DJD/man
cc: Board of Selectmen

589268 v.2/NBRI/0001




NOTES:
1. ALL CURB ON SITE SHALL BE VERTICAL GRANITE CURB
2. GRANITE TRANSITION CURB (6-FT) SHALL BE USED TO TRANSITION DOWN TO FLUSH CONDITION AT PEDESTRIAN RAMPS.
3. ALL ROADWAYS AND PARKING LOTS SHALL BE FULL DEPTH HOT MIX ASPHALT PAVEMENT.
4. SEE LANDSCAPE PLANS FOR SITE WALKWAYS AND LANDSCAPED AREAS.
5. UTILITY TRENCH REPAIRS IN PUBLIC WAYS SHALL BE 8' WIDE (MINIMUM) ACROSS ENTIRE WIDTH OF ROADWAY (SEE DETAIL).

LEGEND

HOT MIX ASPHALT PAVEMENT

SCALE:
1" = 40'

40 20 0 40 80

**PROPOSED PARKING PLAN**


Nitsch Engineering
www.nitscheng.com
120 Front Street, Suite 820
Worcester, MA 01608
T: (508) 365-1030
F: (617) 338-6472
- Civil Engineering
- Land Surveying
- Transportation Engineering
- Structural Engineering
- Green Infrastructure
- Planning
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ARCHITECTS • PROJECT MANAGERS
Burlington, VT 05401
212 Battery Street
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F: 802.863.6955
Newburyport, MA 01950
260 Merrimac Street, Bldg 7
P: 978.499.2999
F: 978.499.2944
www.doreandwhittier.com
DORE & WHITTIER ARCHITECTS, INC.


Project No. 17-759

# W. EDWARD BALMER ELEMENTARY SCHOOL
21 CRESCENT STREET
WHITINSVILLE, MA 01588



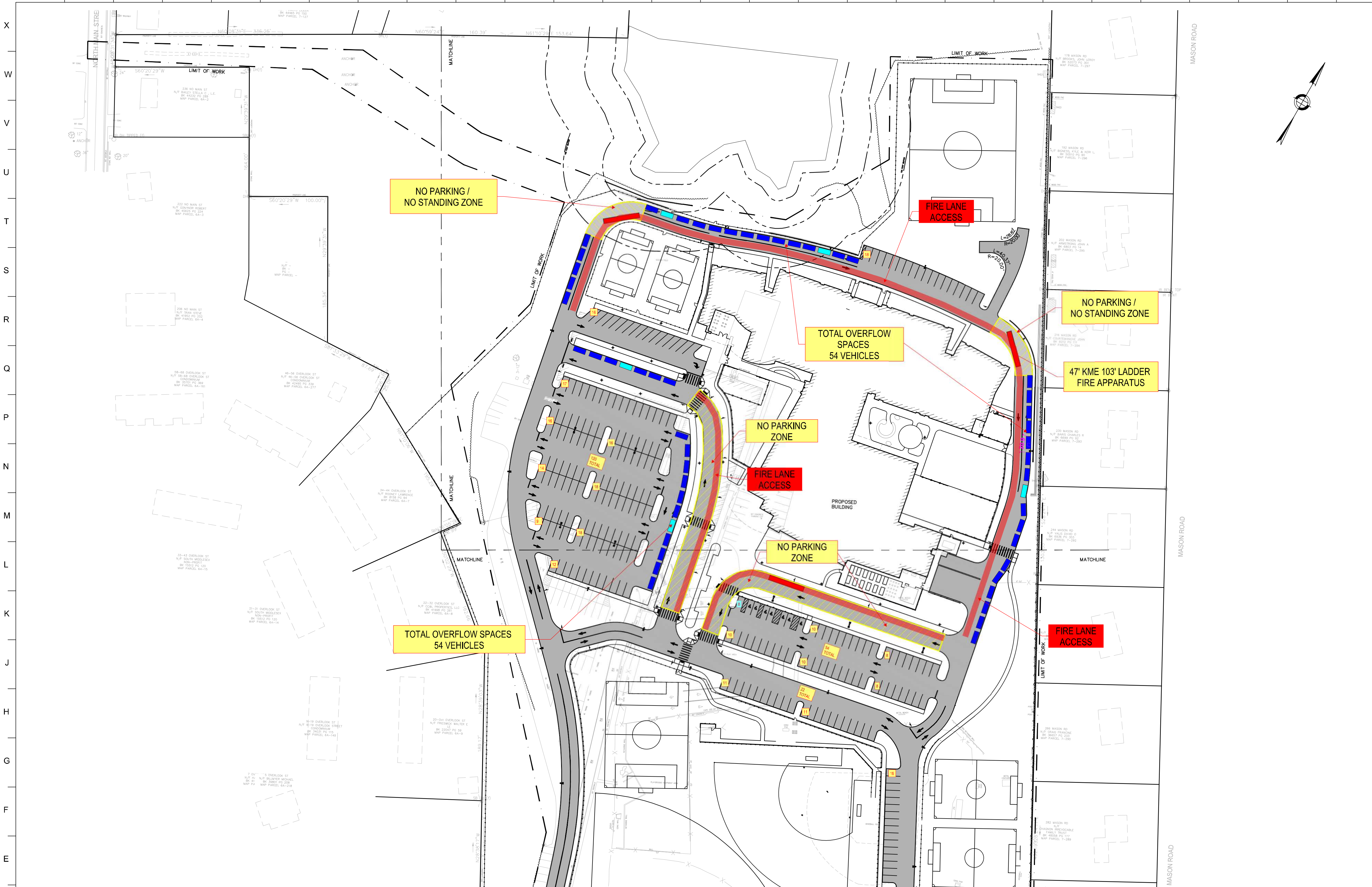
DD Pricing Set

| REVISION: | Date: |
|---|---|

DATE: 02/22/2019
SCALE: 1"=40'

SHEET TITLE:
OVERALL ROADWAY LAYOUT PLAN

SHEET #:
**C3.00**

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1. ALL CURB ON SITE SHALL BE VERTICAL GRANITE CURB
2. GRANITE TRANSITION CURB (6-FT) SHALL BE USED TO TRANSITION DOWN TO FLUSH CONDITION AT PEDESTRIAN RAMPS.
3. ALL ROADWAYS AND PARKING LOTS SHALL BE FULL DEPTH HOT MIX ASPHALT PAVEMENT.
4. SEE LANDSCAPE PLANS FOR SITE WALKWAYS AND LANDSCAPED AREAS.
5. UTILITY TRENCH REPAIRS IN PUBLIC WAYS SHALL BE 8' WIDE (MINIMUM) ACROSS ENTIRE WIDTH OF ROADWAY (SEE DETAIL).

LEGEND

HOT MIX ASPHALT PAVEMENT

SCALE:
1" = 40'

40 20 0 40 80

**PROPOSED EVENT OR OVERFLOW PARKING PLAN**

Nitsch Engineering
www.nitscheng.com
120 Front Street, Suite 820
Worcester, MA 01608
T: (508) 365-1030
F: (617) 338-6472

- Civil Engineering
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DORE & WHITTIER ARCHITECTS, INC.

Project No. 17-759

W. EDWARD BALMER ELEMENTARY SCHOOL
21 CRESCENT STREET
WHITINSVILLE, MA 01588



DD Pricing Set

| REVISION: | Date: |
|---|---|
| | |

DATE: 02/22/2019
SCALE: 1"=40'

SHEET TITLE:
OVERALL ROADWAY LAYOUT PLAN

SHEET #:
**C3.00**

W.E. BALMER ELEMENTARY SCHOOL
DORE & WHITTIER ARCHITECTS
DESIGN DEVELOPMENT ZONING SUBMISSION - PARKING ANALYSIS

February 28, 2019

## TABLE 1 - STAFF COUNT

*Verified with School Administration 1/31/19*

| *SPACE* | *QUAN* | *ADULTS BASED IN EACH* | *FTE* | *STUDENTS IN EACH[1]* | *TOTAL STUDENTS* | *Remarks* |
|---|---|---|---|---|---|---|
| PK CRS | 4 | 1 | 4 | 18 | 72 | |
| PK-K SPED | 1 | 1 | 1 | 12 | 12 | |
| K CRS | 9 | 1 | 9 | 18 | 162 | |
| GRADE 1-5 CRS | 40 | 1 | 40 | 23 | 920 | |
| 1-2 SPED | 2 | 3 | 6 | 12 | 24 | |
| 3-5 SPED | 2 | 3 | 6 | 12 | 24 | |
| RESOURCE ROOM | 3 | 1 | 3 | | | STUDENTS COUNTED ABOVE |
| STUDENT SERVICES | 2 | 26 | 52 | | | PROFESSIONALS WORK IN CLASSROOMS ABOVE |
| ART | 2 | 1 | 2 | | | STUDENTS COUNTED ABOVE |
| MUSIC | 2 | 1 | 2 | | | STUDENTS COUNTED ABOVE |
| GYMNASIUM | 1 | 2 | 2 | | | STUDENTS COUNTED ABOVE |
| LIBRARY | 1 | 2 | 2 | | | STUDENTS COUNTED ABOVE |
| MAKER | 1 | 1 | 1 | | | STUDENTS COUNTED ABOVE |
| OT/PT | 1 | 2 | 2 | | | STUDENTS COUNTED ABOVE |
| ADMIN + NURSE | | | 16 | | | INCL PRINCIPAL OFFICES ON LEVEL 2+3 |
| TITLE 1 OFFICE | | | 1 | | | |
| KITCHEN | | | 5 | | | |
| MAINTENANCE STAFF | | | 2 | | | |
| **SUBTOTAL - FTE** | | | **156** | | 1214 | |
| | | | | | | |
| **VISITORS** | | | | | | |
| ITINERANT PROFESSIONALS | | | 2 | | | Not full time - in building for no more than 2 hours |
| VOLUNTEERS | | | 4 | | | Sporadic, usually present for most of the school day |
| VISITORS | | | 18 | | | 3 meetings a day x 6 people, could be concurrent |
| **SUBTOTAL** | | | **24** | | | |
| | | | | | | |
| **TOTALS** | | | **180** | | **1214** | |

[1] Reflects maximum enrollment, not actual present enrollment.

## TABLE 2 – PARKING AND EVENT ANALYSIS

Proposed Parking Spaces 246 + Overflow Spaces 54 = 300 Total Spaces Onsite Maximum

Table shows the maximum number of cars parked for any given time period/ scenario. Cells highlighted yellow indicate scenario totals above the number of conventional spaces. None of the scenarios exceed the total onsite maximum number of parking spaces, including overflow spaces.

| TIME OF DAY | EVENT/ CONDITION | FREQUENCY | PARKING (LONG TERM) | PARKING (S/T VISITOR <2 hours) | QUEUE SPACE | LOADING SPACE (Semi Truck) | REMARKS |
|---|---|---|---|---|---|---|---|
| **SCHOOL DAY** | | | | | | | |
| 6:00 AM – 7:45 AM | Supply Deliveries | Daily M-F | | | | 2 | Various deliveries throughout week, rarely more than one truck at a time. |
| 6:00 AM – 2:00 PM | Kitchen & Maint. staff in building | | 7 | | | | |
| 6:30 AM – 4:00 PM | Teachers and Staff in Building | Daily M-F | 156 | 24 | | | |
| 6:45 AM – 7:55 AM | Early Care Drop-off | Daily M-F | | 10 | | | Indicates expected max cars at any one time. |
| 7:45 AM – 8:00 AM | Pre-K Parent Park & Drop-Off Arrival | Daily M-F | | 16 | | | Park & Drop Lot assumes 16 live spaces with 2-3 minute use; additional vehicles can use signed north row of west parking lot |
| 8:00 AM – 8:15 AM | Parent Drop-Off & Arrival | Daily M-F | | | 74 | | Assume live spaces in a moving line; 74 vehicles at any one time |
| 8:00 AM – 2:30 PM | Parent Volunteers | Daily M-F | 4 | | | | |
| 8:00 AM – 4:00 PM | Itinerant Staff in Building | Daily M-F | | 2 | | | |
| 8:00 AM – 4:00 PM | Long Term Visitors | Daily M-F | | 18 | | | |
| 2:45 PM – 3:15 PM | Dismissal and Parent Pick-up | Daily M-F | | | 74 | | Some parents may queue earlier than this; 74 vehicles at any one time, additional early cars may park in ~89 vacant site spaces. Dismissals will be staged to even out the peak flow of traffic. |
| **AFTERNOON** | | | | | | | |
| 3:00 PM – 5:00 PM | Student Game – Soccer Fields | Spring/Fall M-F | 168 | | | | (32 players [assume 50% car factor] + 6 adults + 6 additional spectators) X 6 soccer fields = 168 cars |
| 3:00 PM – 5:00 PM | Student Game – Gymnasium | Winter M-F | 47 | | | | Assumes basketball game: 20 players, 6 adults, 40 parents, 1 custd. |
| 3:00 PM – 5:00 PM | School Meetings – Faculty/Staff | Daily M-TH | 127 | | | | Assume all-staff meeting (peak count), 1 custodian |
| 3:00 PM – 5:00 PM | School Club Meeting - Staff | 2x per week | 5 | | | | Assume 20 student members, 4 adults, 1 custodian |

**W.E. BALMER ELEMENTARY SCHOOL**
**DORE & WHITTIER ARCHITECTS**
**DESIGN DEVELOPMENT ZONING SUBMISSION - PARKING ANALYSIS** **February 28, 2019**

| **EVENING** | | | | | | | |
|---|---|---|---|---|---|---|---|
| 4:30 PM – 5:30 PM | Night 1 Parent Open House PK-K | 1x per semester | 260 | | | | 246 students; assume one car per household; 14 staff |
| 5:30 PM – 6:30 PM | Night 1 Parent Open House Gr 1 | 1x per semester | 216 | | | | 196 students; assume one car per household; 20 staff |
| 6:30 PM – 7:30 PM | Night 1 Parent Open House Gr 2 | 1x per semester | 216 | | | | 196 students; assume one car per household; 20 staff |
| 4:30 PM – 5:30 PM | Night 2 Parent Open House Gr 3 | 1x per semester | 216 | | | | 196 students; assume one car per household; 20 staff |
| 5:30 PM – 6:30 PM | Night 2 Parent Open House Gr 4 | 1x per semester | 216 | | | | 196 students; assume one car per household; 20 staff |
| 6:30 PM – 7:30 PM | Night 2 Parent Open House Gr 5 | 1x per semester | 216 | | | | 196 students; assume one car per household; 20 staff |
| 5:30 PM – 9:00 PM | Community Meeting – Small (Media Center or Quiet Lunch L) | Daily T-W-TH | 51 | | | | 50 adult participants; assume one car per each, 1 custodian |
| 5:30 PM – 9:00 PM | Community Meeting – Medium (Café 1 or Café 2) | 1x per 2 weeks | 206 | | | | 195 seats, 10 participants; 1 custodian |
| 5:30 PM – 9:00 PM | Community Meeting – Large (Gymnasium) | 1x per year | 275 | | | | 508 seats, assume 50% car factor (254), 20 participants; 1 custodian |
| 6:30 PM – 8:30 PM | Perform. Art Event - Concert, Play (Café 1) | 2 x per semester | 154 | | | | 190 seats, assume 75% car factor (143), 10 adults; 1 custodian |
| 5:30 PM –7:00 PM | Community Sport –Early Game (Gymnasium) | Winter/ Daily M-F | 122[2] | | | | 148 bleacher seats, assume 75% car factor (111), 10 adults; 1 custodian |
| 7:00 PM – 8:30 PM | Community Sport –Middle Game (Gymnasium) | Winter/ Daily M-F | 122[2] | | | | 148 bleacher seats, assume 75% car factor (111), 10 adults; 1 custodian |
| 8:30 PM – 10:00 PM | Community Sport –Late Game (Gymnasium) | Winter/ Daily M-F | 122[2] | | | | 148 bleacher seats, assume 75% car factor (111), 10 adults; 1 custodian |
| **WEEKEND USE** | | | | | | | |
| 8:00 AM – 3:00 PM | Youth Soccer practices (Fields) | Fall/ Saturdays | 264 | | | | (32 players [1 parent car per each] + 6 adults + 6 additional spectators) X 6 soccer fields = 264 cars |
| 8:00 AM – 5:00 PM | Youth Softball/ Baseball (Diamonds) | Spring/ Saturdays | 68 | | | | (18 players [1 parent car per each] + 6 adults + 10 additional spectators) X 2 baseball diamonds = 68 cars |
| 3:00 PM – 6:30 PM | Community Adult Soccer (Fields) | Fall/ Saturdays, Sundays | 40 | | | | (30 players [1 car per each] + 10 additional spectators) X 1 soccer fields = 40 cars |
| 3:00 PM – 7:00 PM | Community Babe Ruth Baseball (Large Diamond) | Spring/ Saturdays, Sundays | 64 | | | | (18 players [1 parent car per each] + 6 adults + 40 additional spectators) X 1 baseball diamonds = 64 cars |

[2] This number assumes a competition event with full bleachers. Most community sporting events in the gym will be much more sparsely attended.

Existing Parking Spaces - striped, paved, legitimate spaces: 96

# THE NEW W. EDWARD BALMER SCHOOL

## NORTHBRIDGE, MASSACHUSETTS

## PLANNING BOARD SUBMISSION

APRIL 9, 2019

SMMA
Project Management

NORTHBRIDGE
PUBLIC SCHOOLS

Massachusetts School Building Authority
Funding Affordable, Sustainable, and Efficient Schools in Partnership with Local Communities

FONTAINE BROS., INC.
CONSTRUCTION MANAGERS
GENERAL CONTRACTORS

DORE & WHITTIER
ARCHITECTS, INC.

# DD SITE & LANDSCAPE DESIGN PLAN

- 246 parking spaces
- 74 parent drop-off queue spaces
- 20 car active drop off curb zone
- Bus queue: (10) 40’ busses or (7) 40’ busses and (4) 30’ busses or vans


DORE & WHITTIER ARCHITECTS, INC.


APPROACH TO
MAIN ENTRANCE


D&W
DORE & WHITTIER
ARCHITECTS, INC.
AERIAL VIEW OF GRADES PK-2 PLAYGROUND

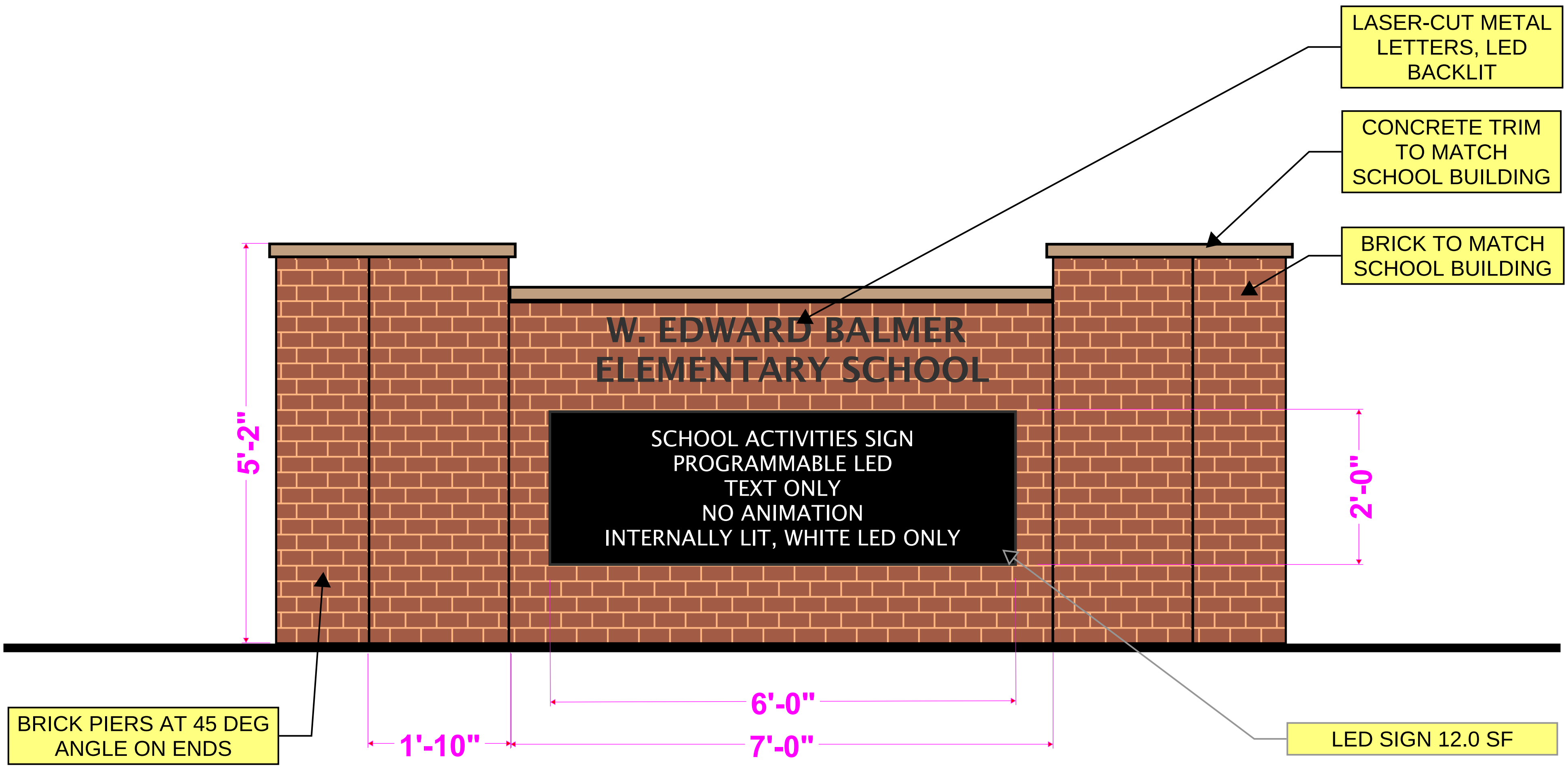

VIEW OF PRE-K ENTRANCE
D&W
DORE & WHITTIER
ARCHITECTS, INC.


APPROACH TO PRE-K ENTRANCE


NORTH ELEVATION VIEW FROM SOCCER FIELD
D&W
DORE & WHITTIER
ARCHITECTS, INC.


DORE & WHITTIER
ARCHITECTS, INC.
VIEW OF GRADES 3-5 PLAYGROUND


DORE & WHITTIER
ARCHITECTS, INC.
OVERALL SOUTHWEST AERIAL VIEW




W. EDWARD BALMER ELEMENTARY SCHOOL

DORE & WHITTIER ARCHITECTS

LANDSCAPE SIGNAGE DETAIL - MAIN SITE ENTRANCE AT CRESCENT STREET

SCALE: 1/2" = 1'-0"

APRIL 9, 2019

# SOLID STATE AREA LIGHTING

# RAZAR SERIES-LED

## S P E C I F I C A T I O N S

PROJECT NAME: SL1/3,SL1/3H,SL2/3

PROJECT TYPE:

OPTICAL HOUSING
Heavy cast low copper aluminum (A356 alloy; <0.2% copper) assembly with integral cooling fins. The Optical Panel mounting surface is milled flat (surface variance <± .002") to facilitate thermal transfer of heat to housing and cooling fins. Solid barrier wall separates optical and electrical compartments. The optical and electrical compartments are integrated to create one assembly. Minimum wall thickness is .188".

ELECTRICAL HOUSING w/ INTEGRATED ARM
Heavy cast low copper aluminum (A356 alloy; <0.2% copper) assembly with integral cooling ribs surrounding the electrical compartment and a flat surface on the top of the arm to accommodate a photocell receptacle. Solid barrier wall separates optical and electrical compartments. The optical compartment and electrical compartment with the integrated support arm combine to create one assembly. Minimum wall thickness is .188". Cast and hinged driver assembly cover is integrated with wiring compartment cover.

**PLED**™ OPTICS
Emitters (LED's) are arrayed on a metal core PCB panel with each emitter located on a copper thermal transfer pad and enclosed by an LED refractor. LED optics completely seal each individual emitter to meet an IP66 rating. In asymmetric distributions, a micro-reflector inside the refractor re-directs the house side emitter output towards the street side and functions as a house side shielding element. Refractors are injection molded H12 acrylic. Each LED refractor is sealed to the PCB over an emitter and all refractors are retained by an aluminum frame. Any one Panel, or group of Panels in a luminaire, have the same optical pattern. LED refractors produce standard site/area distributions. Panels are field replaceable and field rotatable in 90° increments.

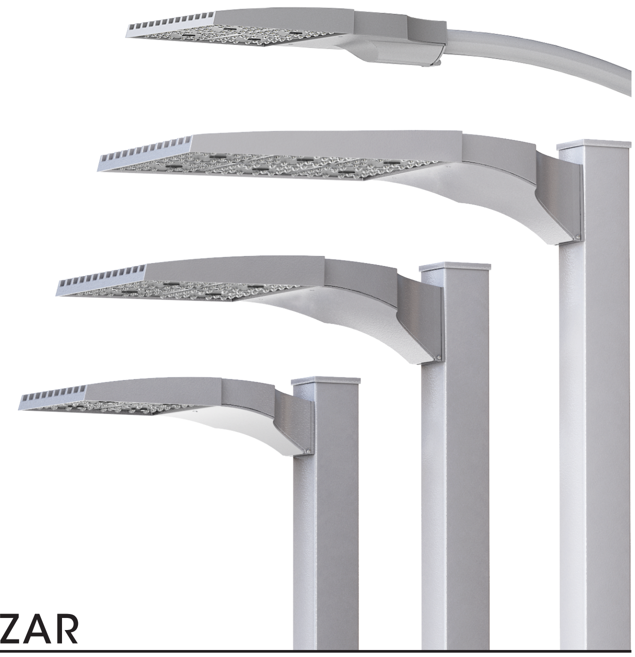
LED DRIVER(S)
Constant current electronic with a power factor of >.90 and a minimum operating temperature of -40°F/-40°C. Driver(s) is/are UL and cUL recognized and mounted directly against the Electrical Housing to facilitate thermal transfer, held down by universal clamps to facilitate easy removal. In-line terminal blocks facilitate wiring between the driver and optical arrays. Drivers accept an input of 120-277V, 50/60Hz or 347V-480V, 50,60Hz. (0 - 10V dimmable driver is standard. Driver has a minimum of 3KV internal surge protection. Luminaire supplied with 20KV surge protector for field accessible installation.)

LED EMITTERS
High output LED's are utilized with drive currents ranging from 350mA to 1050mA. 70CRI Minimum. LED's are available in standard Neutral White (4000K), or optional Cool White (5000K) or Warm White (3000K). Consult Factory for other LED options.

AMBER LED's
**PCA** (Phosphor Converted Amber) LED's utilize phosphors to create color output similar to LPS lamps and have a slight output in the blue spectral bandwidth. **TRA** (True Amber) LED's utilize material that emits light in the amber spectral bandwidth only without the use of phosphors.

FINISH
Electrostatically applied TGIC Polyester Powder Coat on substrate prepared with 20 PSI power wash at 140°F. Four step media blast and iron phosphate pretreatment for protection and paint adhesion. 400°F bake for maximum hardness and durability.

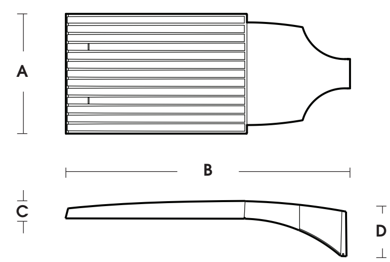
MAST ARM FITTER/ELECTRICAL HOUSING
Replaces standard Electrical Housing. Fits standard 2 3/8" O.D. horizontal tenon. Two (2) straps with two (2) bolts each encircle the lower half of the tenon. Upper half of the tenon rests on self-centering steps that position the angle of the luminaire at 0°, +1.5°, +1.5 or +3° up from the horizontal. All hardware is stainless steel.



## RAZAR

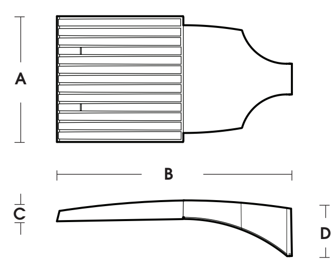
(**MODELS**: RZRM, RZR, RZR-G & RZR-MAF*) PATENT PENDING

RZR-G

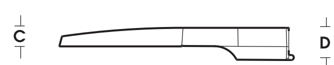



RZR, RZRM & RZR-MAF*
(Top View)

RZR & RZRM




RZR-MAF*




| FIXTURE | A | B | C | D |
|---|---|---|---|---|
| RZR-G | 15" 381mm | 36.5" 927mm | 3" 76mm | 7" 187mm |
| RZR | 14.75" 375mm | 28.25" 718mm | 2.75" 70mm | 6.5" 165mm |
| RZRM | 11.5" 292mm | 22" 559mm | 2.5" 64mm | 5.25" 133mm |
| RZR-MAF | 15" 381mm | 28.25" 724mm | 2.5" 64mm | 4" 102mm |

*DLC PENDING AS OF 7/17

c UL us LISTED

MADE IN THE USA

2018358


660 West Avenue O, Palmdale, CA 93551
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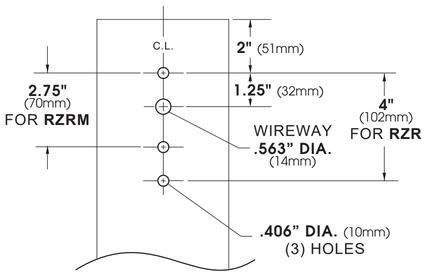
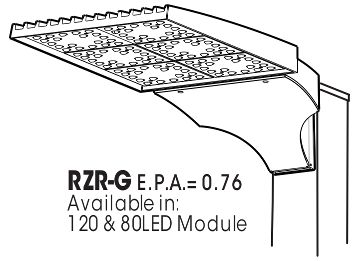
# RAZAR SERIES-LED

## SPECIFICATIONS

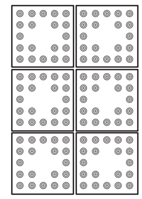
### POLE DRILLING TEMPLATE



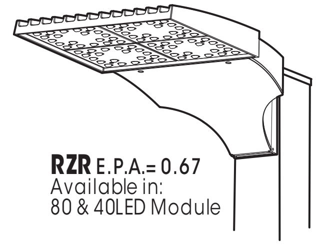

### PLED® MODULES



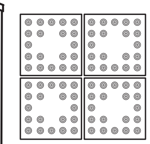
**RZR-G** E.P.A.= 0.76
Available in:
120 & 80LED Module



120 LED Module



**RZR** E.P.A.= 0.67
Available in:
80 & 40LED Module

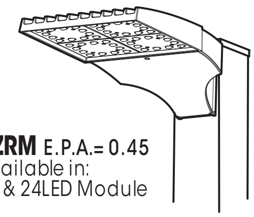


80 LED Module

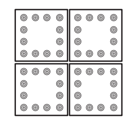
### Approximate Average Lumens – 4000K

(Lumens median of all distributions)

| | 350mA | | | 525mA | | | 700mA | | | 1050mA | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Watts | Lumens | HID Eq. | Watts | Lumens | HID Eq. | Watts | Lumens | HID Eq. | Watts | Lumens | HID Eq. |
| **24** | 28 | 3541 | 50 | 41 | 5058 | 70-100 | 53 | 6567 | 100 | 81 | 8773 | 150-175 |
| **40** | 45 | 5997 | 70-100 | 66 | 8653 | 100-150 | 87 | 10995 | 175 | 134 | 14647 | 200-250 |
| **48** | 55 | 7046 | 100 | 81 | 10018 | 150-175 | 105 | 12600 | 200 | 160 | 17566 | 250 |
| **80** | 87 | 11622 | 175-200 | 131 | 16736 | 200-250 | 174 | 21235 | 400 | 266 | 28190 | 450-575 |
| **120** | 127 | 17405 | 250 | 195 | 24860 | 450 | 260 | 31592 | 575-750 | 396 | 43323 | 750-1000 |



**RZRM** E.P.A.= 0.45
Available in:
48 & 24LED Module



48 LED Module

**Spec/Order Example:** RZR/PLED-IV/80LED-700mA/CW/277/RAL-8019-S

## SPEC/ORDERING INFORMATION

| MODEL | OPTICS | LED MODE | VOLTAGE | FINISH | OPTIONS |
|---|---|---|---|---|---|
| | | | | | |

### MODEL

☐ RZR-G

☐ RZR

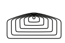
☐ RZR-MAF[1]

☐ RZRM

NOTES:
1 - DLC PENDING AS OF 7/17

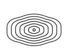
### OPTICS

☐ TYPE II
**PLED-II** . . . . . . .

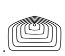


☐ TYPE II FRONT ROW
**PLED-II-FR** . . . . .

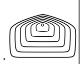
☐ TYPE II MEDIAN ILLUMINATOR
**PLED-II-ML** . . . . .



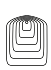
☐ TYPE III MED.
**PLED-III-M** . . . . .



☐ TYPE III WIDE
**PLED-III-W** . . . .



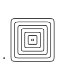
☐ TYPE IV
**PLED-IV** . . . . . . .



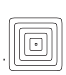
☐ TYPE IV
**PLED-IV-FT** . . . . .

☐ TYPE V NARROW
**PLED-VSQ-N** . . . .

☐ TYPE V MED.
**PLED-V-SQ-M** . .



☐ TYPE V WIDE
**PLED-V-SQ-W** . .



### LED MODE

NO. LEDs

**RZR-G**
☐ 120LED
☐ 80LED

**RZR**
☐ 80LED
☐ 40LED

**RZRM**
48LED
☐ 24LED

DRIVE CURRENT

☐ 350mA
☐ 525mA
☐ 700mA[2]
☐ 1050mA[2]

COLOR TEMP - CCT

☐ NW (4000K)*
*STANDARD
☐ CW (5000K)
☐ WW (3000K)

CONSULT FACTORY FOR OTHER LED COLORS

AMBER[3]

☐ PHOSPHOR CONVERTED AMBER
**PCA**

☐ TRUE AMBER[4]
**TRA**

NOTES:
2 - 700mA and 1050mA NOT FOR USE WITH TRA LED'S
3 - NARROW BAND AMBERS HAVE NO DEFINABLE CCT EQUIVALENT
4 - AVAILABLE IN 350mA & 525mA DRIVE CURRENTS ONLY

### VOLTAGE

☐ 120
☐ 208
☐ 240
☐ 277
☐ 347
☐ 480

### FINISH

STANDARD TEXTURED FINISH

☐ BLACK
**RAL-9005-T**

☐ WHITE
**RAL-9003-T**

☐ GREY
**RAL-7004-T**

☐ DARK BRONZE
**RAL-8019-T**

☐ GREEN
**RAL-6005-T**

FOR SMOOTH FINISH REPLACE SUFFIX "T" WITH SUFFIX "S" (EXAMPLE: RAL-9005-S)

CONSULT FACTORY FOR CUSTOM COLORS

### OPTIONS

☐ HIGH-LOW DIMMING FOR HARDWIRED SWITCHING OR NONINTEGRATED MOTION SENSOR . . . . . . . . . . . . **HLSW**

☐ INTERNAL HOUSE SIDE SHIELD . . . **HS-PLED**

☐ PHOTO CELL + VOLTAGE (EXAMPLE: PC120V) . . **PC+V**

☐ TWIST LOCK RECEPTACLE ONLY . . . **TPR**

☐ 7-PIN TWIST LOCK RECEPTACLE ONLY . . . **TPR7**

☐ SINGLE FUSE (120V, 277V, 347V) . . **SF**

☐ DOUBLE FUSE (208V, 240V, 480V) . . **DF**

☐ STEP DIM MOTION SENSOR (PROGRAMMED 50/100) . . . . . . . . . . . . . . . . . . . **MS-F211**

☐ REMOTE MOTION SENSOR CONFIGURATOR . . . . . . . . . . . . . . . . . . . **MS-FC10**


U.S. Architectural Lighting
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www.usaltg.com


U.S. ARCHITECTURAL LIGHTING

# RAZAR SERIES-LED

## LED/ELECTRICAL GUIDE

| LED COUNT | SOURCE TYPE | SOURCE | INITIAL LUMENS - 4000K CCT | INITIAL LUMENS - 3000K CCT | INITIAL LUMENS - 5000K CCT | L70 GREATER THAN (HR) | STARTING TEMP. | SYSTEM WATTS | VOLTS | MAX INPUT AMPS |
|---|---|---|---|---|---|---|---|---|---|---|
| 24 | LED | 24 PLED® Optical Module - 350mA | 3,298 - 3,784 | 3,133 - 3,595 | 3,463 - 3,973 | 60,000+ | -20°F | 29 | 120<br>277 | 0.24<br>0.10 |
| 24 | LED | 24 PLED® Optical Module - 525mA | 4,711 - 5,405 | 4,475 - 5,135 | 4,947 - 5,675 | 60,000+ | -20°F | 42 | 120<br>277 | 0.34<br>0.15 |
| 24 | LED | 24 PLED® Optical Module - 700mA | 6,023 - 6,911 | 5,722 - 6,565 | 6,324 - 7,256 | 60,000+ | -20°F | 56 | 120<br>277 | 0.45<br>0.20 |
| 24 | LED | 24 PLED® Optical Module - 1050mA | 8,171 - 9,375 | 7,762 - 8,906 | 8,580 - 9,844 | 60,000+ | -20°F | 82 | 120<br>277 | 0.68<br>0.30 |
| 40 | LED | 40 PLED Optical Module - 350mA | 5,585 - 6,408 | 5,306 - 6,088 | 5,864 - 6,729 | 60,000+ | -20°F | 43 | 120<br>277 | 0.38<br>0.17 |
| 40 | LED | 40 PLED® Optical Module - 525mA | 8,059 - 9,246 | 7,656 - 8,784 | 8,462 - 9,709 | 60,000+ | -20°F | 65 | 120<br>277 | 0.55<br>0.24 |
| 40 | LED | 40 PLED® Optical Module - 700mA | 10,240 - 11,749 | 9,728 - 11,162 | 10,752 - 12,337 | 60,000+ | -20°F | 87 | 120<br>277 | 0.73<br>0.32 |
| 40 | LED | 40 PLED® Optical Module - 1050mA | 13,642 - 15,652 | 12,960 - 14,870 | 14,324 - 16,435 | 60,000+ | -20°F | 128 | 120<br>277 | 1.12<br>0.49 |
| 48 | LED | 48 PLED® Optical Module - 350mA | 6,562 - 7,529 | 6,234 - 7,153 | 6,890 - 7,909 | 60,000+ | -20°F | 53 | 120<br>277 | 0.46<br>0.20 |
| 48 | LED | 48 PLED® Optical Module - 525mA | 9,330 - 10,705 | 8,864 - 10,170 | 9,797 - 11,240 | 60,000+ | -20°F | 79 | 120<br>277 | 0.68<br>0.29 |
| 48 | LED | 48 PLED® Optical Module - 700mA | 11,735 - 13,464 | 11,148 - 12,791 | 12,322 - 14,137 | 60,000+ | -20°F | 106 | 120<br>277 | 0.88<br>0.38 |
| 48 | LED | 48 PLED® Optical Module - 1050mA | 16,360 - 18,771 | 15,542 - 17,832 | 17,178 - 19,709 | 60,000+ | -20°F | 160 | 120<br>277 | 1.33<br>0.58 |
| RZR | | | | | | | | | | |
| 80 | LED | 80 PLED® Optical Module - 350mA | 10,824 - 12,419 | 10,283 - 11,798 | 11,365 - 13,040 | 60,000+ | -20°F | 86 | 120<br>277 | 0.75<br>0.33 |
| 80 | LED | 80 PLED® Optical Module - 525mA | 15,587 - 17,884 | 14,808 - 16,990 | 16,366 - 18,778 | 60,000+ | -20°F | 130 | 120<br>277 | 1.10<br>0.48 |
| 80 | LED | 80 PLED® Optical Module - 700mA | 19,767 - 22,680 | 18,779 - 21,546 | 20,755 - 23,814 | 60,000+ | -20°F | 174 | 120<br>277 | 1.45<br>0.63 |
| 80 | LED | 80 PLED® Optical Module - 1050mA | 26,255 - 30,124 | 24,942 - 28,618 | 27,568 - 31,630 | 60,000+ | -20°F | 257 | 120<br>277 | 2.22<br>0.96 |
| RZR-G | | | | | | | | | | |
| 80 | LED | 80 PLED® Optical Module - 350mA | 10,950 - 12,564 | 10,403 - 11,936 | 11,498 - 13,192 | 60,000+ | -20°F | 87 | 120<br>277 | 0.75<br>0.33 |
| 80 | LED | 80 PLED® Optical Module - 525mA | 15,735 - 18,054 | 14,948 - 17,151 | 16,522 - 18,957 | 60,000+ | -20°F | 129 | 120<br>277 | 1.10<br>0.48 |
| 80 | LED | 80 PLED® Optical Module - 700mA | 20,074 - 23,032 | 19,071 - 21,881 | 21,078 - 24,184 | 60,000+ | -20°F | 174 | 120<br>277 | 1.45<br>0.63 |
| 80 | LED | 80 PLED® Optical Module - 1050mA | 27,651 - 31,725 | 26,268 - 30,139 | 29,033 - 33,311 | 60,000+ | -20°F | 266 | 120<br>277 | 2.22<br>0.96 |
| 120 | LED | 120 PLED® Optical Module - 350mA | 16,211 - 18,599 | 15,400 - 17,669 | 17,021 - 19,529 | 60,000+ | -20°F | 130 | 120<br>277 | 1.06<br>0.46 |
| 120 | LED | 120 PLED® Optical Module - 525mA | 23,154 - 26,566 | 21996 - 25,238 | 24,312 - 27,894 | 60,000+ | -20°F | 192 | 120<br>277 | 1.63<br>0.70 |
| 120 | LED | 120 PLED® Optical Module - 700mA | 29,424 - 33,760 | 27,953 - 32,072 | 30,895 - 35,448 | 60,000+ | -20°F | 260 | 120<br>277 | 2.17<br>0.94 |
| 120 | LED | 120 PLED® Optical Module - 1050mA | 40,350 - 46,296 | 38,333 - 43,981 | 42,368 - 48,611 | 60,000+ | -20°F | 398 | 120<br>277 | 3.33<br>1.43 |

**NOTES:**
1. Max Input Amps is the highest of starting, operating, or open circuit currents.
2. Lumen values for LED Modules vary according to the distribution type. 80LED array appears in both the RZR and RZR-G models.
3. System Watts includes the source watts and all driver components.
4. Fuse value should be sufficient to protect all wiring components. For electronic driver and LED component protection, use surge suppressor supplied with luminaire. Note: Surge suppressors are considered a perishable device.
5. L70(10K) – TM-21 6x rule applied.

WARNING: All fixtures must be installed in accordance with local codes or the National Electrical Code. Failure to do so may result in serious personal injury.


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www.usaltg.com

SL3/4

PROJECT NAME:

FIXTURE TYPE:

SOLID STATE AREA LIGHTING

# RAZAR-PT2 SERIES-PLED

## S P E C I F I C A T I O N S

### OPTICAL HOUSING
Heavy cast low copper aluminum (A356 alloy; <0.2% copper) assembly with integral cooling fins. The Optical Panel mounting surface is milled flat (surface variance <±.003") to facilitate thermal transfer of heat to housing and cooling fins. Minimum wall thickness is .188". All hardware is stainless steel.

### TWIN ARM POST TOP MOUNTING/ELECTRICAL COMPARTMENT
Two (2) 1/2" Sch.40 round aluminum arms are welded to a cast low copper aluminum (A356 alloy; <0.2% Cu) pole top tenon fitter which also serves as the LED Driver and wiring compartment. Tenon maximum 27/8" diameter x 31/2" height. All exposed hardware is stainless steel.

### PLED™ OPTICS
Emitters (LED's) are arrayed on a metal core PCB panel with each emitter located on a copper thermal transfer pad and enclosed by an LED refractor. LED optics completely seal each individual emitter to meet an IP66 rating. In asymmetric distributions, a micro-reflector inside the refractor re-directs the house side emitter output towards the street side and functions as a house side shielding element. Refractors are injection molded H12 acrylic. Each LED refractor is sealed to the PCB over an emitter and all refractors are retained by an aluminum frame. Any one Panel, or group of Panels in a luminaire, have the same optical pattern. LED refractors produce standard site/area distributions. Panels are field replaceable and field rotatable in 90° increments.

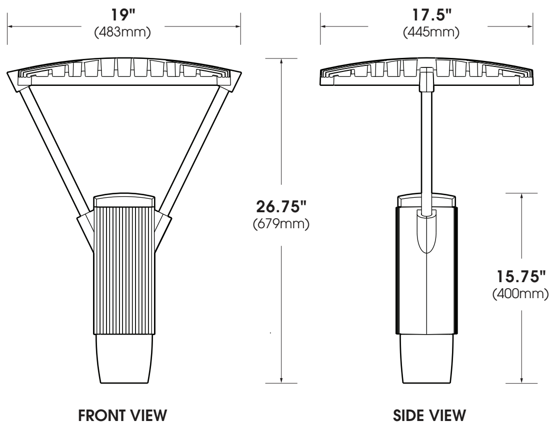
### LED DRIVERS
Constant current electronic with a power factor of >.90 and a minimum operating temperature of -40°F/-40°C. Driver(s) is/are UL and cUL recognized and mounted directly against the Electrical Housing to facilitate thermal transfer, held down by universal clamps to facilitate easy removal. In-line terminal blocks facilitate wiring between the driver and optical arrays. Drivers accept an input of 120-277V, 50/60Hz or 347V-480V, 50,60Hz. (0 - 10V dimmable driver is standard. Driver has a minimum of 3KV internal surge protection. Luminaire supplied with 20KV surge protector for field accessible installation.)

### AMBER LED's
**PCA** (Phosphor Converted Amber) LED's utilize phosphors to create color output similar to LPS lamps and have a slight output in the blue spectral bandwidth. **TRA** (True Amber) LED's utilize material that emits light in the amber spectral bandwidth only without the use of phosphors.

### FINISH
Electrostatically applied TGIC Polyester Powder Coat on substrate prepared with 20 PSI power wash at 140°F. Four step sand blast and iron phosphate pretreatment for protection and paint adhesion. 400°F bake for maximum hardness and durability. Texture finish is standard.

## RZR-PT2 PLED

PATENT PENDING




c UL us LISTED

MADE IN THE USA

2018358



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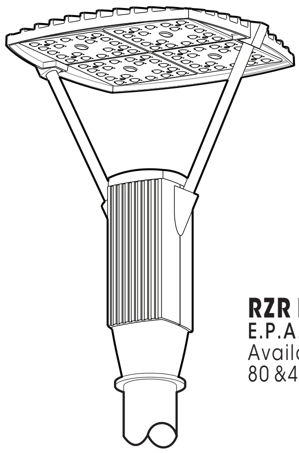
www.usaltg.com


U.S. ARCHITECTURAL LIGHTING

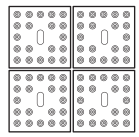
# RZR-PT2 SERIES - PLED

## S P E C I F I C A T I O N S

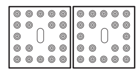
### PLED™ MODULES



**RZR LED POST TOP2**
E.P.A.= 1.08
Available in:
80 &40 LED Array



80 LED Array



40 LED Array

### Approximate Average Lumens – 4000K
(Lumens median of all distributions)

| | 350mA | | | 525mA | | | 700mA | | | 1050mA | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Watts | Lumens | HID Eq. | Watts | Lumens | HID Eq. | Watts | Lumens | HID Eq. | Watts | Lumens | HID Eq. |
| **40** | 45 | 5997 | 70-100 | 66 | 8653 | 100-150 | 87 | 10995 | 175 | 134 | 14647 | 200-250 |
| **80** | 87 | 11622 | 175-200 | 131 | 16736 | 200-250 | 174 | 21235 | 400 | N/A | N/A | N/A |

**Spec/Order Example:** RZR-PT2-LED/PLED-V-SQ/80LED-700mA/NW/277/RAL9005

## S P E C / O R D E R I N G   I N F O R M A T I O N

| MODEL | OPTICS | LED MODE | VOLTAGE | FINISH | OPTIONS |
|---|---|---|---|---|---|
| | | | | | |

### MODEL

☐ RZR-PT2

### OPTICS

☐ TYPE II **PLED-II** . . . . . . .

☐ TYPE II FRONT ROW **PLED-II-FR** . . . . .

☐ TYPE II MEDIAN ILLUMINATOR **PLED-II-ML** . . . . .

☐ TYPE III **PLED-III-M** . . . . .

☐ TYPE III **PLED-III-W** . . . .

☐ TYPE IV **PLED-IV** . . . . . . .

☐ TYPE IV **PLED-IV-FT** . . . . .

☐ TYPE V NARROW **PLED-V-SQ-N** . . .

☐ TYPE V **PLED-V-SQ-M** . .

☐ TYPE V **PLED-V-SQ-W** . .

### LED MODE

**NO. LEDs**

☐ 80LED

☐ 40LED

**DRIVE CURRENT**

☐ 350mA

☐ 525mA

☐ 700mA[1]

☐ 1050mA[1] (40LED ONLY)

**COLOR TEMP - CCT**

☐ NW (4000K)* *STANDARD

☐ CW (5000K)

☐ WW (3000K)

CONSULT FACTORY FOR OTHER LED COLORS

AMBER[2]

☐ PHOSPHOR CONVERTED AMBER **PCA**

☐ TRUE AMBER[3] **TRA**

NOTES:
1 - 700mA and 1050mA NOT FOR USE WITH TRA LED'S
2 - NARROW BAND AMBERS HAVE NO DEFINABLE CCT EQUIVALENT
3 - AVAILABLE IN 350mA & 525mA DRIVE CURRENTS ONLY

### VOLTAGE

☐ 120

☐ 208

☐ 240

☐ 277

☐ 347

☐ 480

### FINISH

STANDARD TEXTURED FINISH

☐ BLACK **RAL-9005-T**

☐ WHITE **RAL-9003-T**

☐ GREY **RAL-7004-T**

☐ DARK BRONZE **RAL-8019-T**

☐ GREEN **RAL-6005-T**

FOR SMOOTH FINISH REPLACE SUFFIX "T" WITH SUFFIX "S" (EXAMPLE: RAL-9005-S)

CONSULT FACTORY FOR CUSTOM COLORS

### OPTIONS

☐ HIGH-LOW DIMMING FOR HARDWIRED SWITCHING OR NONINTEGRATED MOTION SENSOR . . . . . . . . . . . . **HLSW**

☐ INTERNAL HOUSE SIDE SHIELD . . . **HS-PLED**

☐ PHOTO CELL + VOLTAGE (EXAMPLE: PC120V) . . **PC+V**

☐ TWIST LOCK RECEPTACLE ONLY . . . **TPR**

☐ 7-PIN TWIST LOCK RECEPTACLE ONLY . . . **TPR7**

☐ SINGLE FUSE (120V, 277V, 347V) . . **SF**

☐ DOUBLE FUSE (208V, 240V, 480V) . . **DF**

☐ STEP DIM MOTION SENSOR (PROGRAMMED 50/100) . . . . . . . . . . . . . . . . . . . **MS-F211**

☐ REMOTE MOTION SENSOR CONFIGURATOR . . . . . . . . . . . . . . . . . . . **MS-FC10**

# RZR-PT2 SERIES - PLED



| LED COUNT | SOURCE TYPE | SOURCE | INITIAL LUMENS - 4000K CCT | INITIAL LUMENS - 3000K CCT | INITIAL LUMENS - 5000K CCT | L70 GREATER THAN (HR) | STARTING TEMP. | SYSTEM WATTS | VOLTS | MAX INPUT AMPS |
|---|---|---|---|---|---|---|---|---|---|---|
| **40** | LED | 40 **PLED** Optical Module - 350mA | 5,585 - 6,408 | 5,306 - 6,088 | 5,864 - 6,729 | 60,000+ | -20°F | 45 | 120<br>277 | 0.38<br>0.17 |
| **40** | LED | 40 **PLED**® Optical Module - 525mA | 8,059 - 9,246 | 7,656 - 8,784 | 8,462 - 9,709 | 60,000+ | -20°F | 66 | 120<br>277 | 0.55<br>0.24 |
| **40** | LED | 40 **PLED**® Optical Module - 700mA | 10,240 - 11,749 | 9,728 - 11,162 | 10,752 - 12,337 | 60,000+ | -20°F | 87 | 120<br>277 | 0.73<br>0.32 |
| **40** | LED | 40 **PLED**® Optical Module - 1050mA | 13,642 - 15,652 | 12,960 - 14,870 | 14,324 - 16,435 | 60,000+ | -20°F | 134 | 120<br>277 | 1.12<br>0.49 |
| **80** | LED | 80 **PLED**® Optical Module - 350mA | 10,824 - 12,419 | 10,283 - 11,798 | 11,365 - 13,040 | 60,000+ | -20°F | 87 | 120<br>277 | 0.75<br>0.33 |
| **80** | LED | 80 **PLED**® Optical Module - 525mA | 15,587 - 17,884 | 14,808 - 16,990 | 16,366 - 18,778 | 60,000+ | -20°F | 131 | 120<br>277 | 1.10<br>0.48 |
| **80** | LED | 80 **PLED**® Optical Module - 700mA | 19,767 - 22,680 | 18,779 - 21,546 | 20,755 - 23,814 | 60,000+ | -20°F | 174 | 120<br>277 | 1.45<br>0.63 |

**NOTES:**

1. Max Input Amps is the highest of starting, operating, or open circuit currents
2. Lumen values for LED Modules vary according to the distribution type
3. System Watts includes the source watts and all driver components.
4. Fuse value should be sufficient to protect all wiring components. For electronic driver and LED component protection, use surge suppressor supplied with luminaire.
   Note: Surge suppressors are considered a perishable device.
5. L70(10K) – TM-21 6x rule applied

**WARNING:** All fixtures must be installed in accordance with local codes or the National Electrical Code. Failure to do so may result in serious personal injury.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PROJECT NAME: SL4, SL5

PROJECT TYPE:

# RAZAR WALLMOUNT-LED

## S P E C I F I C A T I O N S

### OPTICAL HOUSING
Heavy cast low copper aluminum (A356 alloy; <0.2% copper) assembly with integral cooling fins. The Optical Panel mounting surface is milled flat (surface variance <± .003") to facilitate thermal transfer of heat to housing and cooling fins. The Optical Housing bolts to the Electrical Housing forming a unified assembly.The minimum wall thickness is .188".

### ELECTRICAL HOUSING
Heavy cast low copper aluminum (A356 alloy; <0.2% copper) assembly. Minimum wall thickness is .188". Fixture Mounting Plate affixes to mounting surface over a recessed j-box. Electrical Housing anchors on the top edge of the Mounting Plate and stainless steel recessed socket head screws tighten the Electrical Housing to the Mounting Plate from the bottom.

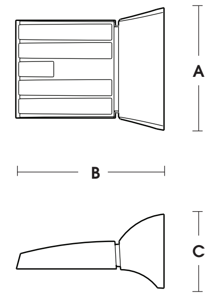
### PLED™ OPTICAL MODULES
Emitters (LED's) are arrayed on a metal core PCB panel with each emitter located on a copper thermal transfer pad and enclosed by an LED refractor. LED optics completely seal each individual emitter to meet an IP66 rating. The asymmetric distributions, have a micro-reflector inside the refractor which re-directs the house side emitter output towards the street side and functions as a house side shielding element. Refractors are injection molded H12 acrylic. Each LED refractor is sealed to the PCB over an emitter and all refractors are retained by an aluminum frame. Any one Panel, or group of Panels in a luminaire, have the same optical pattern. LED refractors produce Type II, III, and Type IV site/area distributions as well as other specialty asymmetric distributions. Panels are field replaceable and field rotatable in 90° increments.

### LED DRIVER(S)
Constant current electronic with a power factor of >.90 and a minimum operating temperature of -40°F/-40°C. Driver(s) is/are UL and cUL recognized and mounted directly against the Electrical Housing to facilitate thermal transfer, held down by universal clamps to facilitate easy removal. In-line terminal blocks facilitate wiring between the driver and optical arrays. Drivers accept an input of 120-277V, 50/60Hz or 347V-480V, 50,60Hz. (0 - 10V dimmable driver is standard. Driver has a minimum of 3KV internal surge protection. Luminaire supplied with 20KV surge protector for field accessible installation.)

### LED EMITTERS
High output LED's are utilized with drive currents ranging from 350mA to 1050mA. 70CRI Minimum. LED's are available in standard Neutral White (4000K), or optional Cool White (5000K) or Warm White (3000K). Consult Factory for other LED options.

### AMBER LED's
**PCA** (Phosphor Converted Amber) LED's utilize phosphors to create color output similar to LPS lamps and have a slight output in the blue spectral bandwidth. **TRA** (True Amber) LED's utilize material that emits light in the amber spectral bandwidth only without the use of phosphors.

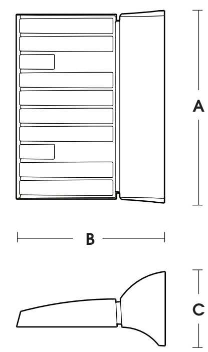
### FINISH
Electrostatically applied TGIC Polyester Powder Coat on substrate prepared with 20 PSI power wash at 140°F. Four step media blast and iron phosphate pretreatment for protection and paint adhesion. 400°F bake for maximum hardness and durability.




| FIXTURE | A | B | C |
|---|---|---|---|
| RZRW1 | 8.75" (22mm) | 12" (305mm) | 6" (152mm) |
| RZRW1-EM | 11" (279mm) | 14" (356mm) | 6.5" (165mm) |

## RZR-WM1

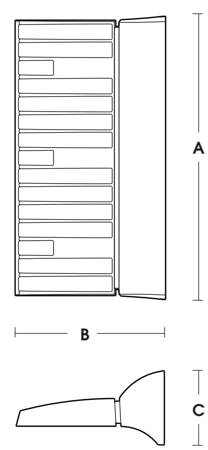
PATENT PENDING

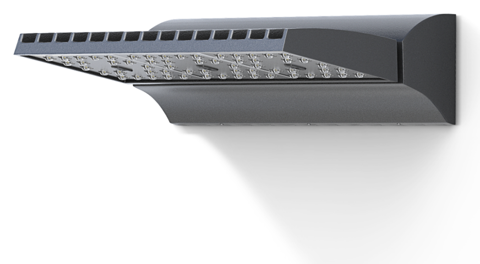



| FIXTURE | A | B | C |
|---|---|---|---|
| RZRW2 | 16" (406mm) | 12" (305mm) | 6" (152mm) |
| RZRW2-EM | 16" (406mm) | 14" (356mm) | 6.5" (165mm) |

## RZR-WM2

PATENT PENDING



| FIXTURE | A | B | C |
|---|---|---|---|
| RZRW3 | 23" (584mm) | 12" (305mm) | 6" (152mm) |
| RZRW3-EM | 23" (584mm) | 14" (356mm) | 6.5" (165mm) |

## RZR-WM3

PATENT PENDING

c UL us LISTED

MADE IN THE USA

2019093



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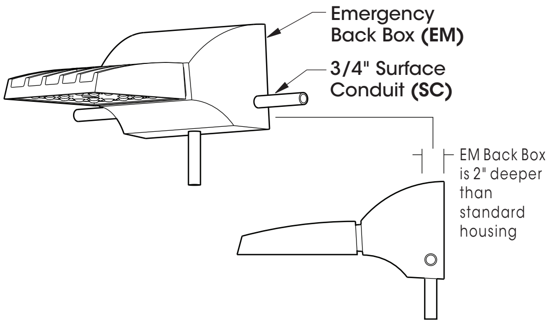
www.usaltg.com

# RAZAR WALLMOUNT SERIES-LED

## SPECIFICATIONS

### EMERGENCY OPTION



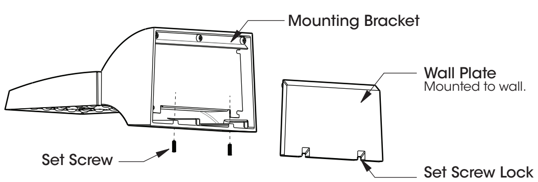

THE EMERGENCY OPTION BACK BOX EXTENDS 2" BEYOND THE STANDARD HOUSING AND CONTAINS THE EMERGENCY COMPONENTS (EC) INCLUDING BATTERIES OR CAN BE USED FOR SURFACE CONDUIT (SC) APPLICATIONS. THERE IS TO BE AN SC1, SC2, AND SC3 OPTION FOR THE DIFFERING HOUSING SIZES. SC SHIPS WITH THREADED CONDUIT PLUGS.

THE EM-LED SYSTEM PROVIDES POWER TO ALL LEDS IN THE ARRAY (20, 40, or 60) TO MEET THE FOLLOWING LIGHT LEVELS FOR A MINIMUM OF 90 MINUTES -

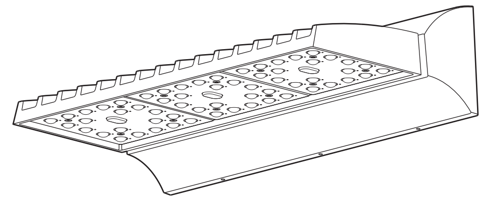
WM1 = 45% @ 350MA
WM2 = 36% @ 350MA
WM3 = 24% @ 350MA

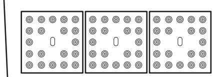
*MULTIPLY THE % ABOVE BY THE LUMEN OUTPUT @ 350MA

### WALL MOUNTING



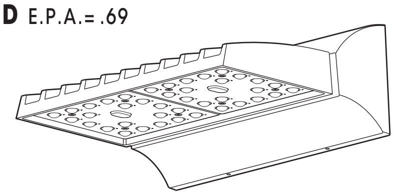

### PLED® MODULES

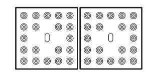




60 LED Module

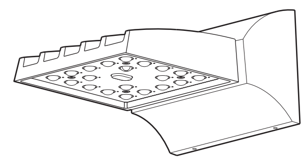
**RZR-WM3-LED** E.P.A.= .69
Available in:
60 LED Module

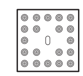




40 LED Module

**RZR-WM2-LED** E.P.A.= .47
Available in:
40 LED Module





20 LED Module

**RZR-WM1-LED** E.P.A.= .33
Available in:
20LED Module

### MAX INPUT WATTAGE

| # OF LED's | DRIVE CURRENT 350mA | 525mA | 700mA | 1050mA |
|---|---|---|---|---|
| 60 | 68W | 99W | 131W | 198W |
| 40 | 45W | 66W | 87W | 134W |
| 20 | 23W | 33W | 44W | 66W |

**Spec/Order Example:** RZR-WM2/PLED-IV/40LED-700mA/CW/277/RAL-8019-S/SF

## SPEC/ORDERING INFORMATION

| MODEL | OPTICS | LED MODE | VOLTAGE | FINISH | OPTIONS |
|---|---|---|---|---|---|
| | | | | | |

### MODEL

☐ RZR-WM1

☐ RZR-WM2

☐ RZR-WM3

### OPTICS

**PLED® DISTRIBUTION TYPE**

☐ TYPE II
**PLED-II** . . . . . . .

☐ TYPE II FRONT ROW
**PLED-II-FR** . . . . .

☐ TYPE III
**PLED-III** . . . . . . .

☐ TYPE III WIDE
**PLED-III-W** . . . .

☐ TYPE IV
**PLED-IV**. . . . . . .

☐ TYPE IV-FT
**PLED-IV-FT** . . . .

### LED MODE

**NO. LEDs**

RZR-WM1
☐ 20LED

RZR-WM2
☐ 40LED

RZR-WM3
☐ 60LED

**DRIVE CURRENT**

☐ 350mA
☐ 525mA
☐ 700mA[1]
☐ 1050mA[1]

**COLOR TEMP - CCT**

☐ NW (4000K)*
*STANDARD
☐ CW (5000K)
☐ WW (3000K)

CONSULT FACTORY FOR OTHER LED COLORS

AMBER[2]

☐ PHOSPHOR CONVERTED AMBER
**PCA**

☐ TRUE AMBER[3]
**TRA**

NOTES:
1 - 700mA and 1050mA NOT FOR USE WITH TRA LED'S
2 - NARROW BAND AMBERS HAVE NO DEFINABLE CCT EQUIVALENT
3 - AVAILABLE IN 350mA & 525mA DRIVE CURRENTS ONLY

### VOLTAGE

☐ 120
☐ 208
☐ 240
☐ 277
☐ 347
☐ 480

### FINISH

**STANDARD TEXTURED FINISH**

☐ BLACK
**RAL-9005-T**

☐ WHITE
**RAL-9003-T**

☐ GREY
**RAL-7004-T**

☐ DARK BRONZE
**RAL-8019-T**

☐ GREEN
**RAL-6005-T**

FOR SMOOTH FINISH REPLACE SUFFIX "T" WITH SUFFIX "S" (EXAMPLE: RAL-9005-S)

CONSULT FACTORY FOR CUSTOM COLORS

### OPTIONS

☐ HIGH-LOW DIMMING FOR EXTERNAL CONTROL . . **HLSW**
☐ HOUSE SIDE SHIELDING . . . . . . . . . . . . . . . . . . . . **HS-PLED**
☐ PHOTO CELL + VOLTAGE (EXAMPLE: PC120V) . . . **PC+V**
☐ SINGLE FUSE (120V & 277V) . . . . . . . **SF**
☐ DOUBLE FUSE (208V & 240V) . . . . . . . **DF**
☐ STEP DIM MOTION SENSOR (PROGRAMMED 50/100) . . . . . . . . . . . . . . . . . . . . . **MS-F211**
☐ REMOTE MOTION SENSOR CONFIGURATOR . . . . . . . . . . . . . . . . . . . . . **MS-FC10**
☐ EMERGENCY BACKUP 1. . **EM1**
☐ EMERGENCY BACKUP 1 (HOUSING ONLY) . . . . . **EMH1**
☐ EMERGENCY BACKUP 2. . **EM2**
☐ EMERGENCY BACKUP 3. . **EM3**
☐ SURFACE CONDUIT 1. . . **SC1**
☐ SURFACE CONDUIT 2 . . **SC2**
☐ SURFACE CONDUIT 3 . . **SC3**



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# RAZAR WALLMOUNT-LED

LAMP/ELECTRICAL GUIDE

| LED COUNT | SOURCE TYPE | SOURCE | INITIAL LUMENS - 4000K | INITIAL LUMENS - 3000K | INITIAL LUMENS - 5000K | L70 GREATER THAN (HR)-TM21 | STARTING TEMP. | SYSTEM WATTS | VOLTS | MAX INPUT AMPS |
|---|---|---|---|---|---|---|---|---|---|---|
| **20** | LED | 20 **PLED®** Optical Module - 350mA | 2,706 – 2,993 | 2,571 – 2,843 | 2,841 – 3,143 | 60,000+ | -20°F | 22 | 120<br>277<br>347 | 0.19<br>0.08<br>0.07 |
| **20** | LED | 20 **PLED®** Optical Module - 525mA | 3,897 – 4,310 | 3,702 – 4,095 | 4,092 – 4,526 | 60,000+ | -20°F | 33 | 120<br>277<br>347 | 0.28<br>0.12<br>0.10 |
| **20** | LED | 20 **PLED®** Optical Module - 700mA | 4,942 – 5,466 | 4,695 – 5,193 | 5,189 – 5,739 | 60,000+ | -20°F | 44 | 120<br>277<br>347 | 0.37<br>0.16<br>0.13 |
| **20** | LED | 20 **PLED®** Optical Module - 1050mA | 6,564 – 7,260 | 6,236 – 6,897 | 6,892 – 7,623 | 60,000+ | -20°F | 65 | 120<br>277<br>347 | 0.55<br>0.24<br>0.19 |
| **40** | LED | 40 **PLED** Optical Module - 350mA | 5,585 – 6,178 | 5,206 – 5,869 | 5,864 – 6,487 | 60,000+ | -20°F | 43 | 120<br>277<br>347 | 0.36<br>0.16<br>0.13 |
| **40** | LED | 40 **PLED®** Optical Module - 525mA | 8,059 – 8,914 | 7,656 – 8,468 | 8,462 – 9,360 | 60,000+ | -20°F | 65 | 120<br>277<br>347 | 0.55<br>0.24<br>0.19 |
| **40** | LED | 40 **PLED®** Optical Module - 700mA | 10,240 – 11,327 | 9,728 – 10,761 | 10,752 – 11,893 | 60,000+ | -20°F | 87 | 120<br>277<br>347 | 0.73<br>0.32<br>0.26 |
| **40** | LED | 40 **PLED®** Optical Module - 1050mA | 13,642 – 15,089 | 12,690 – 14,335 | 14,324 – 15,843 | 60,000+ | -20°F | 129 | 120<br>277<br>347 | 1.08<br>0.47<br>0.38 |
| **60** | LED | 60 **PLED®** Optical Module - 350mA | 8,118 – 8,979 | 7,712 – 8,530 | 8,524 – 9,428 | 60,000+ | -20°F | 65 | 120<br>277<br>347 | 0.55<br>0.24<br>0.19 |
| **60** | LED | 60 **PLED®** Optical Module - 525mA | 11,690 – 12,930 | 11,106 – 12,284 | 12,275 – 13,577 | 60,000+ | -20°F | 98 | 120<br>277<br>347 | 0.82<br>0.36<br>0.29 |
| **60** | LED | 60 **PLED®** Optical Module - 700mA | 14,825 – 16,398 | 14,084 – 15,578 | 15,566 – 17,218 | 60,000+ | -20°F | 131 | 120<br>277<br>347 | 1.09<br>0.47<br>0.38 |
| **60** | LED | 60 **PLED®** Optical Module - 1050mA | 19,691 – 21,780 | 18,706 – 20,691 | 20,676 – 22,869 | 60,000+ | -20°F | 193 | 120<br>277<br>347 | 1.61<br>0.70<br>0.56 |

**NOTES:**

1. Max Input Amps is the highest of starting, operating, or open circuit currents
2. Lumen values for LED Modules vary according to the distribution type
3. System Watts includes the source watts and all driver components.
4. Fuse value should be sufficient to protect all wiring components.
5. L70(10K) – TM-21 6x rule applied

   L70(10K) – Calculated = 244,000 @ 700mA
   = 102,000@ 1050mA

**WARNING:** All fixtures must be installed in accordance with local codes or the National Electrical Code. Failure to do so may result in serious personal injury.



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BIRCHWOOD lighting | a LEVITON® company

www.birchwoodlighting.com

# VANESSA LED

## Wet Location Luminaire

Distributed Array LED

Ceiling Mount | Wall Mount | CSS

VANESSA combines high-end architectural styling with precision engineering to create a strong, elegant wet-location luminaire designed to complement wet exterior or interior installations.

Weather-sealing prevents water and moisture from entering the lens, power entry points and end-caps. Constructed of heavy gauge extruded aluminum, precision machined smooth end-caps and extruded acrylic lenses, VANESSA is built to last while withstanding elements associated with wet-location applications.

VANESSA is available as LED and single or double T5 or T8, or single T5HO linear fluorescent lamps. 2', 3', 4', 6' and 8' nominal lengths are standard, continuous runs are available.

IP65 Rating

UL and c-UL listed for wet locations.

Made in the USA

## FIXTURE SPECIFICATIONS

**Construction**
Heavy gauge square extruded aluminum housing. Precision-machined aluminum end-caps. Extruded acrylic lenses. Stainless steel hardware. Concealed weather-seal gaskets at end caps, lens and power entry on all stand-alone or continuous run fixtures with an IP65 rating. Feed points accept ½" trade size threaded wet location conduit fittings.

**Mounting Options**
(CSS) Cable Suspension System field adjustable 1⁄16" aircraft cable, (WM) Wall Mount, (REC) Recessed or (CM) Ceiling Mount.

**Finishes**
(SL) Silver Matte Texture, (MW) Matte White, or (FB) Flat Black. Other powder coat finishes available. Consult factory for details.

**LED Light Engine System**
LED Light Engines are available as HLO (High Lumen Output) and SLO (Standard Lumen Output) providing efficient illumination. CLO (Custom Lumen Output) allows for end user specified lumen output or tailored wattage consumption for certain models. Consult factory for details.

**Dimming**
Dimming is available with a variety of control protocols and options. Consult factory for availability and specifications.

**Acrylic Lens Options**
(FW) Frosted White impact resistant extruded lens.

**Fixture Length**
Fixtures are available in 2', 3', 4', 6' and 8' nominal lengths. Continuous run mounting available featuring water-sealed gaskets within knock-outs for maintaining WL rating. See installation section for more details.

**Custom and Mods**
We proudly specialize in manufacturing custom and modified luminaires and have the ability to modify most of our standard fixtures. Please contact factory with any inquiries.

V-0217

BIRCHWOOD lighting | a LEVITON® company

www.birchwoodlighting.com

# VANESSA LED

## Wet Location Luminaire

Distributed Array LED

Type: Job Name:

Ceiling Mount | Wall Mount | CSS

## SPECIFICATION CODE

CSS selections only[3]

VAN-LED-400 ____ ____ ____ ____ ____ ____ ____ ____ ____ ____ ____ ____ ____ ____

| model | light engine | color temp | length | distribution | mounting | feed | finish | lens | voltage | driver | standard cable length | standard cord color | option | option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| Model | Light Engine | Color Temp | Nominal Length | Distribution | Mounting | Feed | Finish | Lens | Voltage | Driver | Options |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **VAN-LED-400** | **SLO** - Standard Lumen Output<br>**HLO** - High Lumen Output<br>**CLO**[4]**__** - Custom Lumen Output<br>CLO Calculator | **27** - 2700K<br>**30** - 3000K<br>**35** - 3500K<br>**40** - 4000K | **2** - 2'<br>**3** - 3'<br>**4** - 4'<br>**6** - 6'[6]<br>**8** - 8'[6]<br>**CR_**[1] Continuous Run | **DR** - Direct | **CSS** - Cable Suspended<br>**WM** - Wall Mount<br>**CM** - Ceiling Mount<br>**REC** - Recessed | **STND** - Standard<br>**EFL**[5] - End Feed Left<br>**EFR**[5] - End Feed Right<br>**EF2**[5] - End Feed (both ends)<br>**JBE**[5] - J-box extender | Powder Coat<br>**SMT** - Silver Matte Texture<br>**MW** - Matte White<br>**FB** - Flat Black<br>**CUP**[2] - Custom | **FW** - Frosted White | **120**<br>**277**<br>**347**[4] | **EB** - Electronic (standard)<br>Dimming<br>**D1** - 1% (nom) 0-10V<br>**D10** - 10% 0-10V | CSS: **CSS**[3] - Cable Length<br>**CSS**[3] - Power Cord Color<br>**EM**[5] - Emergency Inverter<br>**HAT**[7] - High Ambient Temperature |

### CSS Options

| Cable Length | Power Cord Color |
|---|---|
| **36** - 36" (standard) | **W** - White |
| **72** - 72" | **B** - Black |
| **120** - 120" | **G** - Gray (standard) |

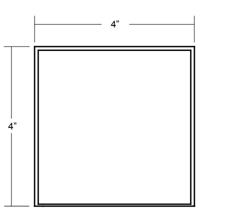
### NOTES

1 specify length in nominal feet
2 contact factory for custom finish
3 see options for non-standard selections
4 available for EB, D1, D10 drivers only
5 EM's are remote mounted along with the test switch in a dry location, consult factory for more info
6 6' & 8' lengths are made up with (2) 3' fixtures or (2) 4' fixtures respectively
7 direct (DR) distribution only

VANESSA is rated for operation with ambient temperatures not to exceed 40°C. Use specification code "HAT" for applications where ambient will be between 40° and 45°C. The "HAT" option is a thermistor which will control internal temperatures so as not to exceed internal device maximum temperature. At certain temperature thresholds, fixture will dim light output to keep internal temperatures within the acceptable range. Available for EB, D1 and D10 drivers only, consult factory for more details.

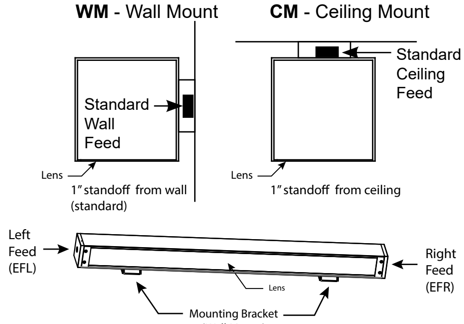
*see option sheet for details

### Dimensions

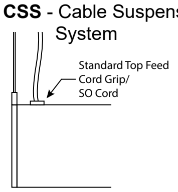



### Mounting

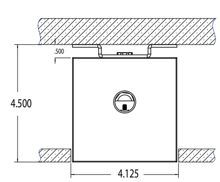
**WM** - Wall Mount **CM** - Ceiling Mount




**CSS** - Cable Suspension System




**REC** - Recessed




### LED

**VAN-LED-400** (4000K FW lens)

**SLO** - 89.4 lm/watt delivered @ 4.4 w/ft consumed watts, 393 lm/ft.
**HLO** - 84 lm/watt delivered @ 9 w/ft consumed watts, 756 lm/ft.
**CLO** - refer to CLO Calculator
LED supplement info

V-0217

Nitsch Engineering

# Transportation Impact Report

## W. Edward Balmer Elementary School
Northbridge, MA

January 26, 2018

Prepared for:

Dore & Whittier Architects, Inc.
260 Merrimac Street, Bldg. 7
Newburyport, MA 01950

Submitted by:

Nitsch Engineering
2 Center Plaza, Suite 430
Boston, MA 02108

Nitsch Project #12260.

Building better communities with you.

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# 1 INTRODUCTION

Nitsch Engineering has been retained by Dore & Whittier Architects to prepare a qualitative assessment of safety, traffic circulation, and traffic access/egress, associated with the feasibility study and schematic design for the proposed W. Edward Balmer (Balmer) Elementary School reconstruction project located in Northbridge, Massachusetts.

The Project includes construction of a new Balmer Elementary School building and grounds on the site of the existing school, located at 21 Crescent St in Northbridge. The existing Balmer School is an elementary educational institution with an enrollment of 569 students in second through fourth grades, and approximately 49 staff.

The following four (4) potential options are being considered:

1. Option B2, Grades 2-4, New Construction at the Rear of the Site (510 enrollment and approximately 49 staff)
2. Option C2, Addition/Renovation of the existing Balmer School, keeping the Academic Wing (1,030 enrollment K-5, plus 80 PK, 1,110 total and approximately 80staff)
3. Option C3, Grades PK-5, New Construction at the Rear of the Site (1,030 enrollment K-5, plus 80 PK, 1,110 total and approximately 80 staff)
4. Option C5, Grades PK-5, New Construction, Front of the Site (1,030 enrollment K-5, plus 80 PK, 1,110 total and approximately 80 staff)

The evaluation will be based on the two (2) enrollment options of A with 510 and B with 1,110 students, because all four (4) options have identical access and egress points. In Option A, the existing school will be replaced in kind with a new school. In Option B., the new larger school will combine Balmer and Northbridge Elementary Schools.

The report describes the project area, presents traffic counts (taken in 2017), and evaluates the existing facilities and the site improvements to support the development alternatives by analyzing existing and future traffic operating efficiency. The data is used to determine the traffic circulations, overall operations, and to evaluate the traffic impacts of the proposed school.

The standards used for analysis conform to the 2009 edition of the *Manual on Uniform Traffic Control Devices*[1] (MUTCD), 2009 edition and the 2010 edition of the Highway Capacity Manual.

The following conditions are analyzed in this report:

- Existing Conditions 2017;
- Future 2024 No-Build;
- Future 2024 Build based on enrollment option of 510 students; and
- Future 2024 Build based on enrollment option of 1,110 students.

Figure 1 is the Locus Map showing the proximity of the new school and the surrounding roadway network. Figure 2 shows the existing conditions of the school site.

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[1] Manual on Uniform Traffic Control Devices for Streets and Highways, 2009 Edition, Federal Highway Administration

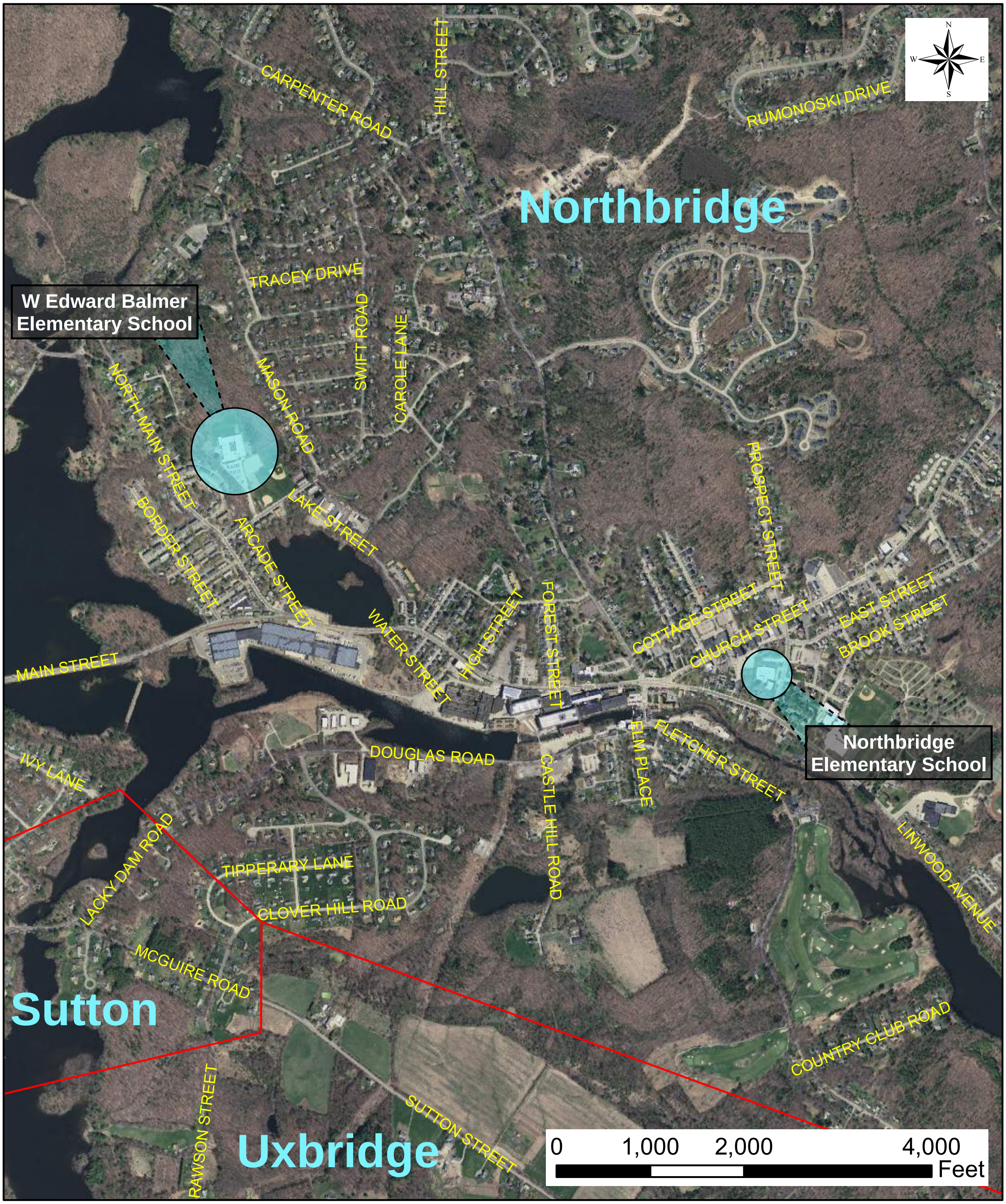



**Figure 1: Locus Map**

W. Edward Balmer and Northbridge Elementary School
Northbridge, Massachusetts

Data Source: MassGIS
Nitsch Project #12260.1

Nitsch Engineering


**Figure 2: Existing Conditions**
W. Edward Balmer Elementary School
Northbridge, Massachusetts

Data Source: MassGIS
Nitsch Project #12260.1

Nitsch Engineering

# 2 EXISTING CONDITIONS

## 2.1 Study Area Roadways

To examine the existing conditions, we studied and collected data at the following roadways:

1. Main Street,
2. North Main Street,
3. Crescent Street, and
4. Lake Street,

*Main Street*

Main Street is classified by the Massachusetts Department of Transportation (MassDOT) as a Rural Major Collector and runs in the east-west directions between the Worcester-Providence Turnpike (Route 146) in Northbridge and Hill St in Northbridge. The posted speed limits along the roadway in the study area are 30 miles per hour. The land use is primarily commercial within the study area. The roadway is within the jurisdiction of the Town of Northbridge.

*North Main Street*

North Main Street is classified by MassDOT as a Rural Major Collector and runs in the southeast-northwest directions between Goldthwaite Road and Main Street in Northbridge. The posted speed limits along the roadway in the study area are 25 miles per hour. The land use is primarily residential. The roadway is within the jurisdiction of the Town of Northbridge.

*Crescent Street*

Crescent Street is classified by MassDOT as a local roadway and runs in the northeast-southwest directions between Mason Road and North Main Street in Northbridge. The roadway within the study area is designated as School Zone, with 20 miles per hour posted speed limits. The land use is primarily residential. The roadway is within the jurisdiction of the Town of Northbridge.

*Lake Street*

Lake Street is classified by MassDOT as a local roadway and runs in the north-south directions between Crescent Street and Main Street in Northbridge. The roadway within the study area does not have a posted speed limit. The roadway is within the jurisdiction of the Town of Northbridge.

## 2.2 Study Area Intersections

To examine the existing conditions, we included the following intersections in the study area. The intersection locations are shown in Figure 3.

1. Main Street at Lake Street
2. Main Street at North Main Street

3. North Main Street at Crescent Street,
4. Crescent Street at Arcade Street,
5. Crescent Street at Balmer Elementary School Driveway, and
6. Crescent Street at Lake Street.

*Main Street at Lake Street*

Main Street intersects Lake Street at a three-way unsignalized intersection with Main Street approaching from the east and west and Lake Street approaching from the north. Main Street operates freely with no control. Lake Street operates with stop control.

From both approaches Main Street is a two-way roadway with one travel lane in each direction separated with double yellow centerlines, and is approximately 30 feet wide. Approaching from the north Lake Street is approximately 26 feet wide and contains one travel lane in each direction. There are no pavement markings separating the lanes. Continuous concrete sidewalks are present on both sides of each approach. A crosswalk is present across Main Street.

*Main Street at North Main Street*

Main Street and North Main Street intersect as a three-way unsignalized intersection, with Main Street approaching from the west and east and North Main Street approaching from northwest. Main Street operates freely with no control. North Main Street operates with stop control.

From both approaches, Main Street is a two-way roadway with one lane in each direction, separated by double yellow centerline and is approximately 40 feet wide. Approaching from northwest, North Main Street is a two-lane roadway separated with a double yellow center line. At the intersection, North Main Street is separated with a raised concrete median, and is approximately 72 feet wide. Cement concrete sidewalks are present along both sides of Main Street and North Main Street on the approach to the intersection. Crosswalks are present across North Main Street.

*North Main Street at Crescent Street*

North Main Street, Crescent Street and C Street intersect at a four-way unsignalized intersection, with North Main Street approaching from southeast and northwest, Crescent Street approaching from the northeast, and C Street approaching from the southwest. Crescent Street and C Street operate with stop control. North Main Street operates freely with no control.

From both approaches North Main Street is a two-way roadway with one lane in each direction, separated by double yellow centerline. Approaching the intersection, the North Main Street is approximately 27 feet wide. Approaching the intersection Crescent Street and C Street are two-way roadways with one lane in each direction without separation and approximately 25 feet wide at the intersection. Cement concrete sidewalk and crosswalks are present on all sides of the intersection. Crosswalks are present across all approaches.

*Crescent Street at Arcade Street*

Crescent Street intersects Arcade Street at a three-way unsignalized intersection with Crescent Street approaching from the northeast and southwest and Arcade Street approaching from the southeast. Crescent Street operates freely with no control. Arcade Street operates with stop control.

From both approaches, Crescent Street is approximately 26 feet wide and contains one travel lane in each direction. There are no pavement markings separating the lanes. Approaching from southeast, Arcade Street is approximately 25 feet wide and contains one travel lane in each direction. There are no pavement markings separating the lanes. Continuous cement concrete sidewalks are present on both sides of Crescent Street. Continuous bituminous concrete sidewalks are present on both sides of Arcade Street. A Crosswalk is present across Arcade Street approach.

*Crescent Street at Balmer Elementary School Driveway*

Crescent Street intersects the Balmer Elementary School Driveway at a three-way unsignalized intersection with Crescent Street approaching from the northeast and southwest and the driveway approaching from the northwest. Crescent Street operates freely with no control. The Balmer Elementary School Driveway operates with stop control.

From both approaches, Crescent Street is approximately 26 feet wide and contains one travel lane in each direction. There are no pavement markings separating the lanes. Approaching from northwest, The Balmer Elementary School Driveway is approximately 30 feet wide. and contains one travel lane in each direction. There are no pavement markings separating the lanes. Continuous cement concrete sidewalks are present on both sides of Crescent Street. A continuous bituminous concrete sidewalk is present on easterly side of the driveway. Crosswalks are present across the Balmer Elementary School Driveway and the southwest Crescent Street approach leg.

*Crescent Street at Lake Street*

Crescent Street intersects Lake Street at a three-way unsignalized intersection with Crescent Street approaching from the northeast and southwest and Lake Street approaching from the southeast. Crescent Street operates freely with no control. Lake Street operates with stop control.

From both approaches Crescent Street is approximately 30 feet wide and contains one travel lane in each direction. There are no pavement markings separating the lanes. Lake Street is approximately 26 feet wide and contains one travel lane in each direction. There are no pavement markings separating the lanes. Cement concrete sidewalk is present on both sides of Crescent Street and the east side of Lake Street. Crosswalks are present across the Lake Street.

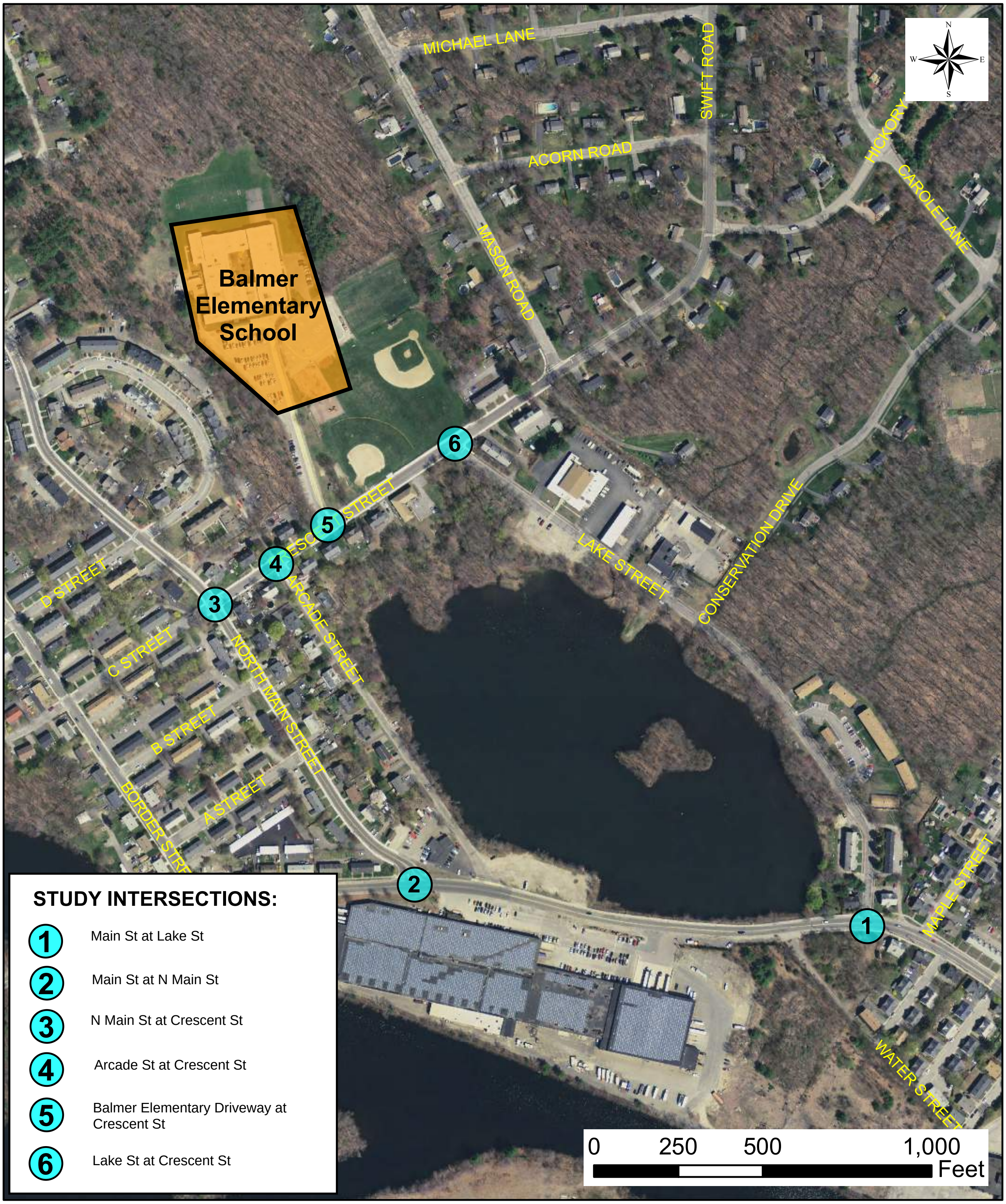



**Figure 3: Intersection Locations**
W. Edward Balmer Elementary School
Northbridge, Massachusetts

Data Source: MassGIS
Nitsch Project #12260

Nitsch Engineering

### 2.3 Balmer Elementary School Site Visit

Nitsch Engineering conducted two site visits (Tuesday September 12, and Wednesday September 13, 2017) to observe the site circulation associated with the weekday morning drop-off, weekday afternoon pick-up and general queue lengths around both Balmer Elementary and Northbridge Elementary School sites. The weekday morning drop-off observation occurred during clear conditions with a temperature of approximately 72 degrees. The weekday afternoon pick-up activity occurred during clear conditions with a temperature of approximately 82 degrees.

### 2.4 Balmer Elementary School Site Access and Egress

Balmer Elementary School is located at 21 Crescent St, North of Main Street, in Northbridge. The School is accessed from Crescent Street. The access and egress to the school (parental drop-off and pick-up, as well as the teachers and staff) occurs from Crescent Street through the school driveway to the parking lot. The school driveway is approximately 590 feet long and 40 feet wide. An 8-foot wide sidewalk is present at the easterly side of the driveway, which connects the sidewalk along Crescent Street to Balmer Elementary School.

### 2.5 Balmer Elementary School Traffic Circulation and Pick-up/Drop-off

Figures 4 and 5 graphically depicts the queuing activity during the weekday morning drop-off and afternoon pick-up periods at the existing Balmer Elementary School.

***Existing Morning Drop-off Circulation:***

Parents arrive at the school through Crescent Street from 7:45 AM through 8:30 AM, and enter the two drop off lines at the fenced in play lot. The children are greeted by a couple of the teachers who assist them when exiting the cars. Some parents also park at the school lot and walk their children to the school entrance. A total of 112 vehicles entered the school parking lot, of which 74 parental drop-offs were observed during morning. A total of 17 buses and one mini-bus/Special Ed bus drop off students at the school. At the time of observation, we did not notice any bus and vehicular traffic conflict occurring. 71 vehicles entering the site were traveling southwest-bound on Crescent Street while 41 vehicles were traveling eastbound. 41 vehicles exiting the site were observed traveling eastbound on Crescent Street while 33 vehicles were observed traveling westbound.

***Existing Afternoon Pick-up Circulation:***

The afternoon pick-up period occurs approximately from 1:45 PM to 2:45 PM. Parents start arriving from Crescent Street around 1:45 PM, and park at the fenced in play lot, southeast of the school, and wait for their children. We observed 63 vehicles parked at this lot. At the time of observation, we did not notice any parental vehicle parking extend out of the fenced area. All the parents walk to the school to collect their children at the Parent Pickup door. Once they have collected their children they leave via Crescent Street, and normal traffic returns around 2:45 PM. 45 vehicles entering the site were traveling westbound on Crescent Street while 18 vehicles were traveling eastbound. 42 vehicles exiting the site were observed traveling eastbound on Crescent Street while 44 vehicles were observed traveling westbound.

Table 1 quantifies the parent and bus drop-off/pick-up totals for the school during the site visit.

**Table 1 - Balmer School Drop-Off/Pick-Up Quantity**

| Type | Parent | | Bus | | Mini-Bus/SP. ED | |
|---|---|---|---|---|---|---|
| Time | Drop-Off | Pick-Up | Drop-Off | Pick-Up | Drop-Off | Pick-Up |
| 7:45 - 8:00 | 2 | | 3 | | | |
| 8:00 - 8:15 | 40 | | 11 | | | |
| 8:15- 8:30 | 32 | | 3 | | 1 | |
| 1:45 - 2:00 | | 4 | | 1 | | |
| 2:00 - 2:15 | | 20 | | 2 | | |
| 2:15 - 2:30 | | 27 | | 4 | | |
| 2:30 - 2:45 | | 12 | | 10 | | 1 |
| Total | 74 | 63 | 17 | 17 | 1 | 1 |

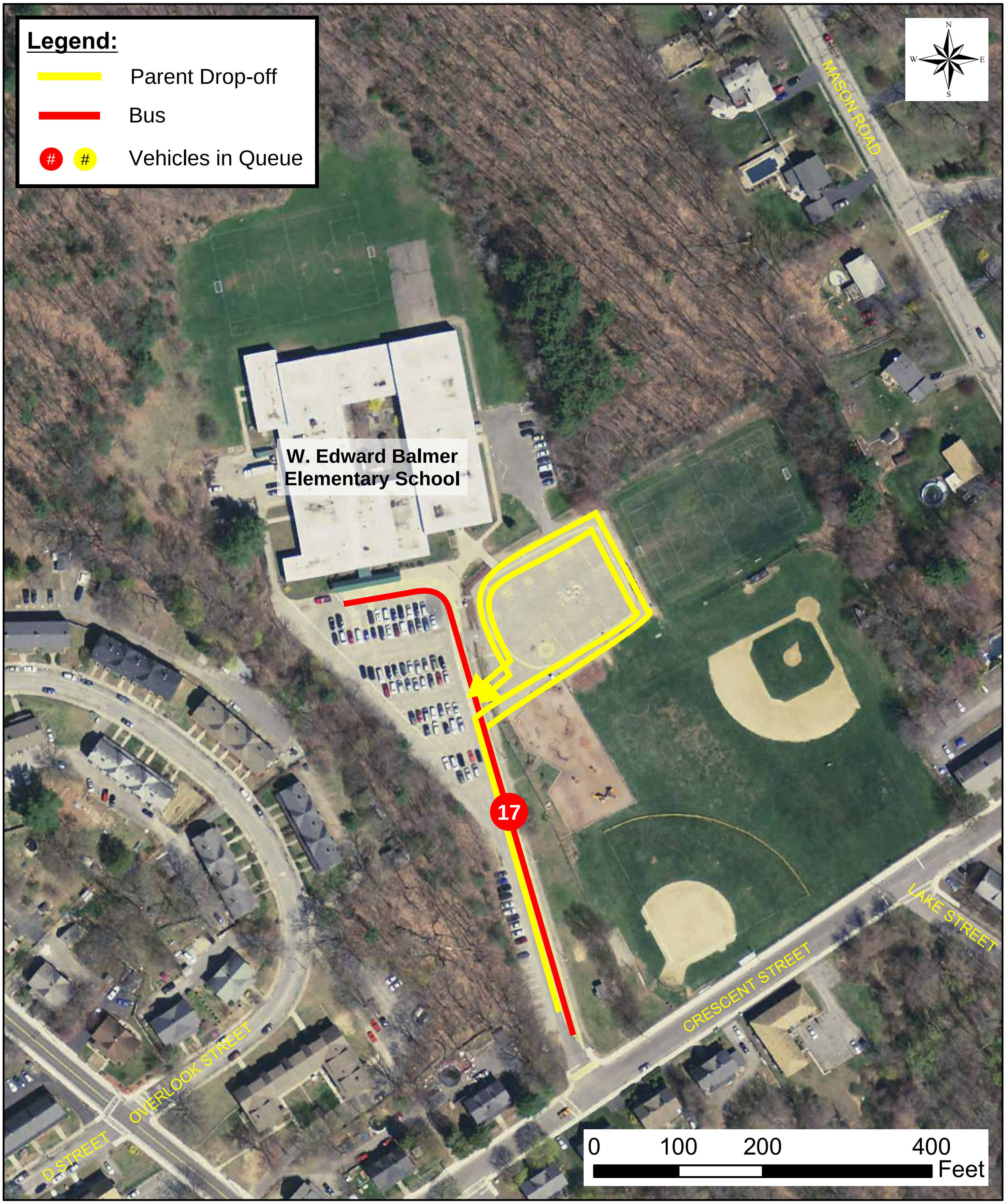



**Figure 4: AM Drop-Off Queue**

W. Edward Balmer Elementary School

Northbridge, Massachusetts

Data Source: MassGIS

Nitsch Project #12260.1

Nitsch Engineering

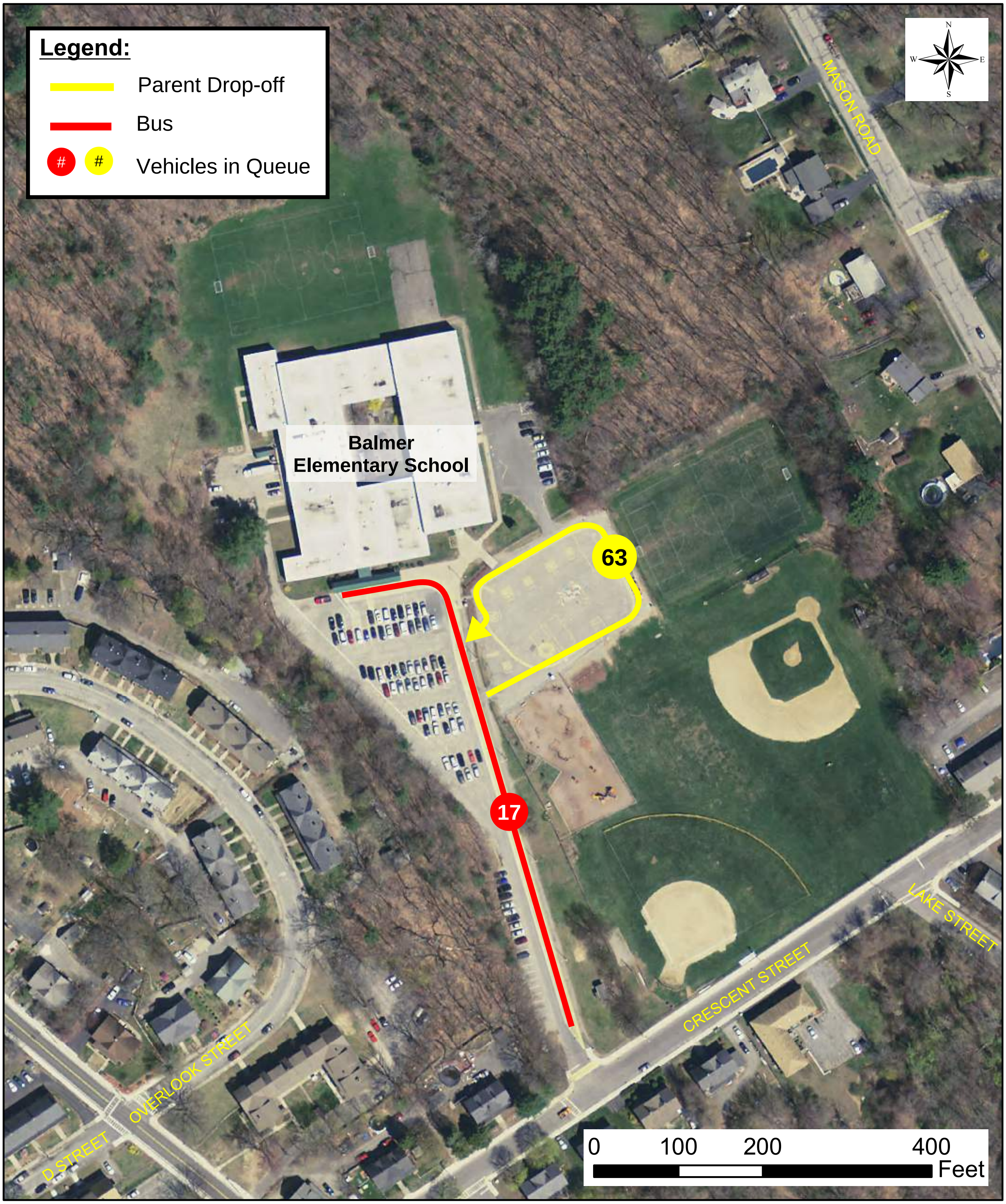



**Figure 5: PM Pick-Up Queue**
W. Edward Balmer Elementary School
Northbridge, Massachusetts

Data Source: MassGIS
Nitsch Project #12260.1

Nitsch Engineering

## 2.6 Balmer Elementary School Parking Supply and Demand

Nitsch Engineering performed a parking supply and demand count on September 12, 2017. The utilization of the lot was taken at 10:00 AM.

As shown on Figure 6, a total of 91 parking spaces were counted in four sections within the Balmer Elementary School, including 3 of which are accessible spaces. This meets the Architectural Access Board (AAB) Code of Massachusetts Regulations (521 CMR) for the required number of accessible parking spaces. The 3 accessible spaces were not utilized. The overall lot utilization was 74%.

Nitsch Engineering used the Institute of Transportation Engineers (ITE) publication Parking Generation, 4th Edition to estimate the parking demands for the two future school options (Grades 2-4 with 510 students and staff of 49, or PK-5 with 1110 students and staff of 80).

Parking generation rates for the Elementary School were based on Land Use Code (LUC) 520 (Elementary School). We used the Number of Students as the independent variable to base the ITE parking generation rates.

Based on the ITE parking generation rates, the parking demand for a school with a population of 510 is 88 parking spaces.

Based on the ITE parking generation rates, the parking demand for a school with a population of 1110 is 189 parking spaces.


**Figure 6: Parking**
W. Edward Balmer Elementary School
Northbridge, Massachusetts

Data Source: MassGIS
Nitsch Project #12260.1

Nitsch Engineering

## 3 SAFETY ANALYSIS

### 3.1 Crash Data

Nitsch Engineering reviewed the crash data available from MassDOT for the three (3) most recent years available – 2013 to 2015 – for the study intersections. A summary of the crashes, including the severity, and the manner of collision are shown in Table 2.

**Table 2 - Crash Summary**

| Location | Number of Crashes | | | Severity | | | | Manner of Collision | | | | | Percent During | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Year | Total Crashes | Average | PD[a] | PI[b] | NR[c] | F[d] | A[e] | RE[f] | HO[g] | Other[h] | Incl. Ped-Bike[j] | Peak Hours[k] | Wet/Icy Conditions |
| N. Main St at Crescent St | 2013 | 0 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0% | 0% |
| | 2014 | 1 | 1.00 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 100% | 0% |
| | 2015 | 2 | | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 100% | 0% |
| Crescent St at Arcade St | 2013 | 0 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0% | 0% |
| | 2014 | 0 | 0.67 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0% | 0% |
| | 2015 | 2 | | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 50% | 50% |
| Main St at N. Main St | 2013 | 1 | | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 100% | 0% |
| | 2014 | 1 | 1.33 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0% | 100% |
| | 2015 | 2 | | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0% | 50% |
| Main St at Lake St | 2013 | 0 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0%! | 0% |
| | 2014 | 0 | 0.33 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0% | 0% |
| | 2015 | 1 | | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0% | 0% |
| Crescent St at Lake St | 2013 | 0 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0% | 0% |
| | 2014 | 0 | 0.00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0% | 0% |
| | 2015 | 0 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0% | 0% |
| Crescent St at School Dr | 2013 | 1 | | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 100% | 100% |
| | 2014 | 0 | 0.33 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0% | 0% |
| | 2015 | 0 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0% | 0% |
| Total | ALL | **11** | **3.67** | **8** | **3** | **0** | **0** | **6** | **1** | **0** | **4** | **0** | 55% | 36% |

[a]Property Damage Only; [b]Personal Injury Only (non-Fatal Injury); [c]Not Reported; [d]Fatality; [e]Angle; [f]Rear end; [g]Head on; [h]Sideswipe, opposite direction; sideswipe, same direction, single vehicle crash, rear-to-rear, not reported, unknown, etc.; [j]Includes pedestrian or cyclist; [k]Occurred between 7-9am or 4-6pm

A total of 11 crashes were reported within the study areas for the six intersections from 2013 to 2015. In terms of severity, eight of the crashes involved property damage only and three reported personal injury. In terms of manner of collision, six of the crashes were angle collisions, one was a rear-end crash, and four were of other type. Approximately 55% of the crashes occurred during the peak hours of 7:00 to 9:00 AM or 4:00 to 6:00 PM and 36% occurred during wet/icy conditions. Analyzing the crash data, as most crashes were of angle or rear-end type, the crashes were most likely caused by driver carelessness or inattentiveness.

A factor in determining overall safety of an intersection is to calculate the crash rate by using MassDOT Crash Rate worksheets. The rate at an intersection can be compared to the average for its district and statewide.

The crash data and crash rates are summarized in Appendix A-3.

# 4 EXISTING TRAFFIC CONDITIONS

## 4.1 2017 Traffic Count Data

*Automatic Traffic Recorder (ATR) Data*

Precision Data Industries, LLC (PDI) of Berlin, Massachusetts was retained by Nitsch Engineering to conduct 48-hour Automatic Traffic Recorder (ATR) vehicle traffic counts throughout the study area; from Tuesday, November 28 to Wednesday, November 29, 2017 (Table 3). A copy of the raw traffic count data is included in Appendix A-1.

**Table 3 - Automatic Traffic Recorder (ATR) Summary**

| LOCATION | PERIOD | ADT[a] | | | PEAK HOUR TRAFFIC | | | | K factor[d] |
|---|---|---|---|---|---|---|---|---|---|
| | | VOLUMES (vpd)[b] | DIRECTIONAL DISTRIBUTION | | PERIOD | VOLUMES (vph)[c] | DIRECTIONAL DISTRIBUTION | | |
| North Main Street north of Main Street | Weekday | 4,950 | 50% | NB | Morning | 403 | 51.61% | SB | 0.08 |
| | | | | | Evening | 464 | 52.37% | NB | 0.09 |
| Crescent Street east of the existing School Driveway | Weekday | 1,366 | 51% | WB | Morning | 226 | 61.06% | WB | 0.17 |
| | | | | | Evening | 204 | 52.45% | EB | 0.15 |
| Main Street west of Lake Street | Weekday | 10,476 | 50% | EB | Morning | 710 | 54.93% | EB | 0.07 |
| | | | | | Evening | 891 | 53.31% | WB | 0.09 |

[a] Average Daily Traffic; [b] Vehicles per day; [c] Vehicles per hour; [d] Percent of daily traffic (shown as decimal)

*Turning Movement Count (TMC) Data*

PDI collected Turning Movement Counts (TMC) data for the study area intersections near the Balmer Elementary School from Tuesday, November 28 to Wednesday, November 29, 2017 from 7:00 AM to 9:00 AM and 1:30 PM to 3:30 PM to capture both morning and afternoon peak periods for the school. The TMC data included bicycle and pedestrian counts. The peak hours within the study area were established as 7:00 AM to 8:00 AM during the weekday morning period and 2:00 PM to 3:00 PM during the afternoon period. The 2017 Existing Traffic Volumes are shown in Figure 7.

*Vehicle Travel Speeds*

PDI measured vehicle travel speeds at the ATR locations at the time of the traffic count. The 85th percentile speed, meaning the speed at which 85% of the vehicles are at or below, is noted because of its importance in determining appropriate roadway speed limits and for calculating required sight distance. The speed data is shown in Table 4.

**Table 4 - Vehicle Travel Speeds**

| LOCATION | POSTED SPEED (MPH[a]) | 85th PERCENTILE SPEED (MPH[a]) |
|---|---|---|
| North Main Street north of Main Street | | |
| Northbound | 30 | 37 |
| Southbound | 30 | 37 |
| Crescent Street and School Driveway | | |
| Westbound | 20 | 30 |
| Eastbound | 20 | 28 |
| Main Street west of Water Street | | |
| Westbound | 30 | 41 |
| Eastbound | 30 | 42 |

[a] = Miles per hour

Note: 85th Percentile Speeds were averaged between the full two days of data collected

## 4.2 Seasonal Adjustment

Nitsch Engineering researched data from MassDOT to establish if any seasonal adjustment to the traffic counts was necessary. We used MassDOT's 2013 Weekday Seasonal Adjustment Factors, which is the latest data set available. The data compares monthly traffic volumes from different types of roadways across the Commonwealth to compare the traffic volumes from each individual month to the annual average. During the month of September on urban arterials and collectors in this area, traffic volumes are approximately 7% higher than an average month. Additionally, the counts were performed while school was in full session, so the traffic counts represent the average condition with respect to traffic within the study area. To be conservative, we made no adjustment to the collected volumes. The Weekday Seasonal Adjustment Factors are included in Appendix A-2.

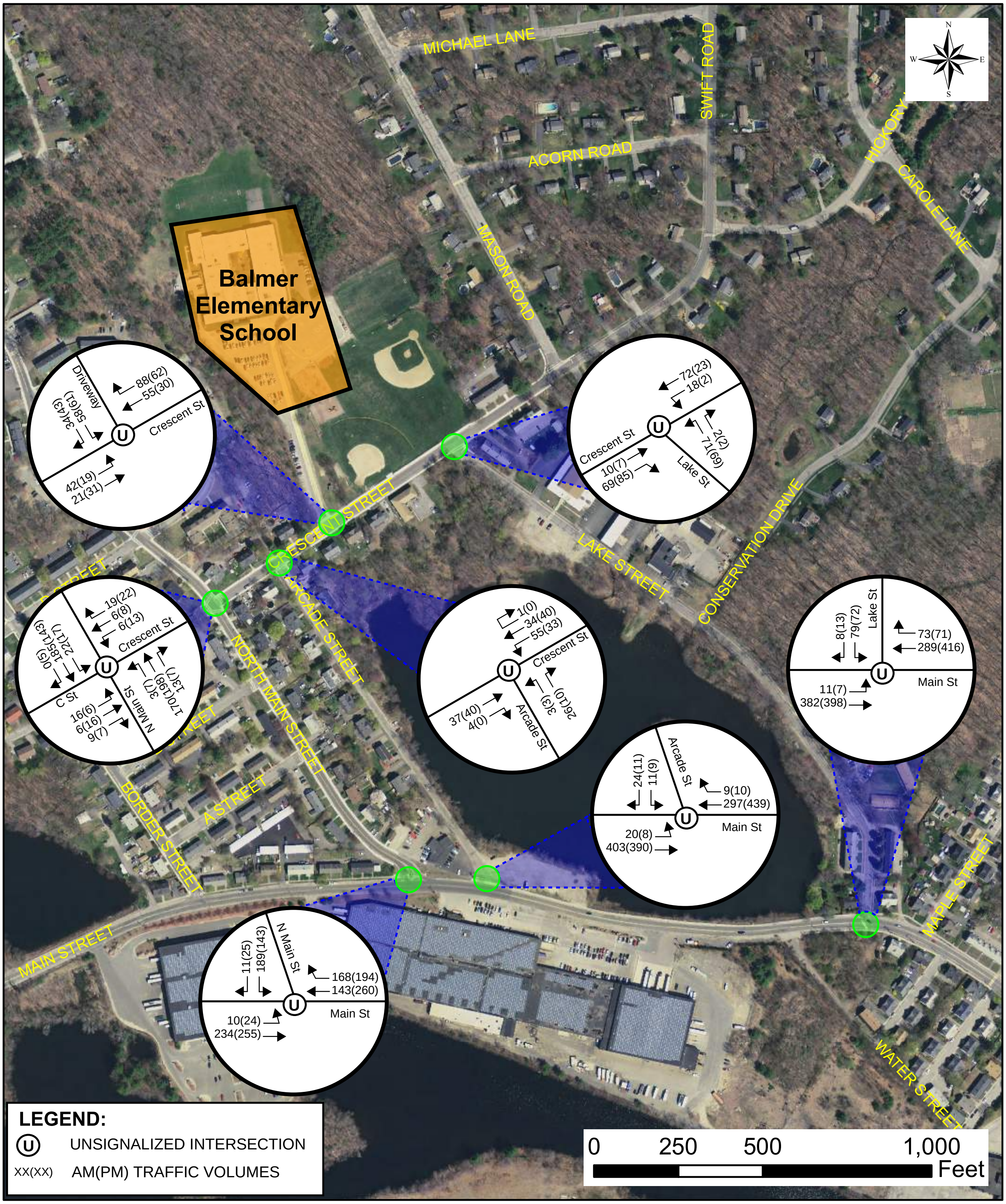



**Figure 7: 2017 Existing Volumes**

W. Edward Balmer Elementary School

Northbridge, Massachusetts

Data Source: MassGIS

Nitsch Project #12260

Nitsch Engineering

# 5 FUTURE NO-BUILD TRAFFIC CONDITIONS

Nitsch Engineering used the 2017 existing traffic volumes as the baseline for projecting traffic volumes for the chosen seven-year design horizon to the 2024 future no-build condition. To determine the future 2024 No-Build condition, the following steps are included:

- Project existing 2017 traffic volumes seven years in the future to the horizon year (2024) using an annual background traffic growth factor;
- Add traffic volumes associated with any planned developments that may impact the study area; and
- Analyze the study area location to determine future operational statistics.

## 5.1 Background Growth

Nitsch Engineering used the previous 10-year data from MassDOT count station #3192, located on Hill Street approximately 1.7 miles north of Main Street to calculate the background traffic growth. We used an annual background traffic growth factor of 1%, which is also consistent with recent MassDOT projects in eastern Massachusetts.

## 5.2 Planned Development

Nitsch Engineering contacted the Town of Northbridge to establish if there are any planned development projects in the vicinity of the study that would add additional trips in the near future. Per the Town of Northbridge, there are no new planned developments in the vicinity of Balmer Elementary School.

## 5.3 No-Build Traffic Volumes

The 2024 No-Build Traffic Volumes are shown in Figure 8 and are derived by applying the compounded traffic growth rate of 1% per year over the seven-year design horizon to project the 2024 traffic volumes.

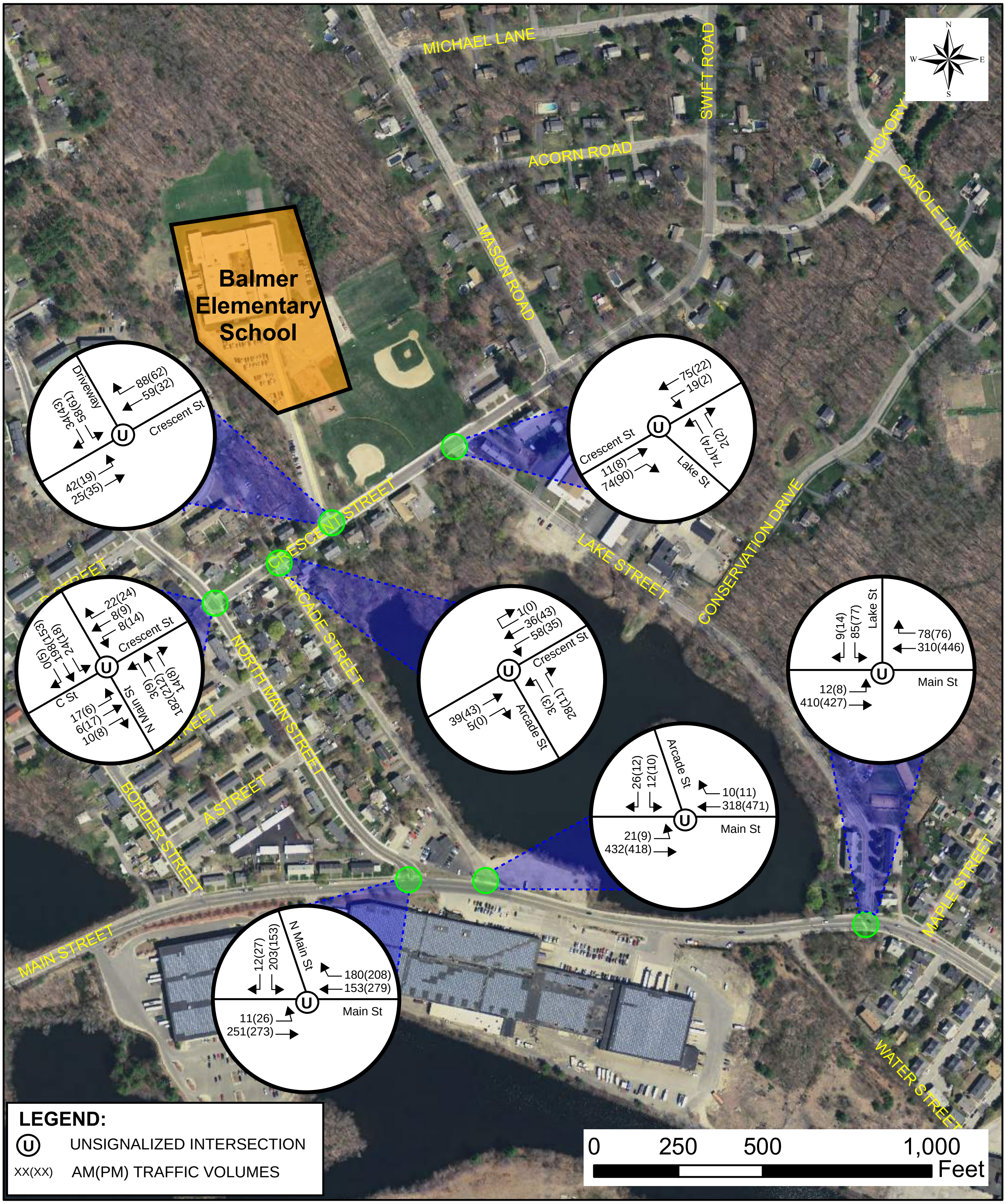



**Figure 8: 2024 Future Volumes - No Build**
W. Edward Balmer Elementary School
Northbridge, Massachusetts

Data Source: MassGIS
Nitsch Project #12260

Nitsch Engineering

## 6 FUTURE CONDITIONS

Nitsch Engineering performed a design year traffic analysis to compare existing traffic operations with the proposed conditions of constructing a new Balmer Elementary School building and grounds on the existing site based on the two enrollment options of 510 and 1,110 students.

Sketch plans of the four redevelopment options for constructing a new Balmer Elementary School on the existing site are shown in Appendix A-4. The sketch plans show the proposed driveway locations of the school on an existing base map with the site location and outline.

The proposed school options will provide many enhancements to traffic circulations and controls such as a new egress to North Main Street, providing an extended parent queue on site, separation of cars and buses, providing a dedicated delivery access and increased parking.

### 6.1 Proposed School Access and Egress, Circulation, Bus and Parent Pick-Up/Drop-Off

The proposed four development options for constructing a new Balmer Elementary School on the existing site will have identical access and egress points. The new School (regardless of the option) will continue to be accessed from Crescent Street now using two driveways. The access and egress to the school (parental drop-off and pick-up, as well as teachers and staff) will occur from the new driveway opposite Lake Street to the circular driveway at the new main entrance. The existing school driveway will also be used for pre-kindergarten parental drop-off and pick-up as well as access to the parking lots.

The bus and delivery traffic will arrive through the new driveway opposite Lake Street. The bus drop-off/pick-up will occur at the designated bus lane located south of the school.

A new one-way driveway will also allow vehicular egress to North Main Street.

### 6.2 Trip Generation for New School with 510 Student Enrollment Option (Option A)

Nitsch Engineering used the Number of Students as the independent variable to base the trip generation rates. The existing school enrolls 569 students with 55 teachers and staff. The enrollment at the new school will be 510 students for 2$^{nd}$ through 4$^{th}$ grade, and approximately the same number of teachers and staff as there are currently. This means a reduction in school enrollment. To be conservative, we have used the existing enrollment data for our analysis.

Table 5 summarizes vehicle trips generated by the proposed school. The vehicle trips include teachers and staff at the new school.

**Table 5 - Proposed Trip Generation - Option A**

| TIME PERIOD | | EXISTING |
|---|---|---|
| AM | ENTERING | 130 |
| | EXITING | 92 |
| | TOTAL | 222 |
| PM | ENTERING | 81 |
| | EXITING | 104 |
| | TOTAL | 185 |

*Trip Distribution, and Assignment – Option A*

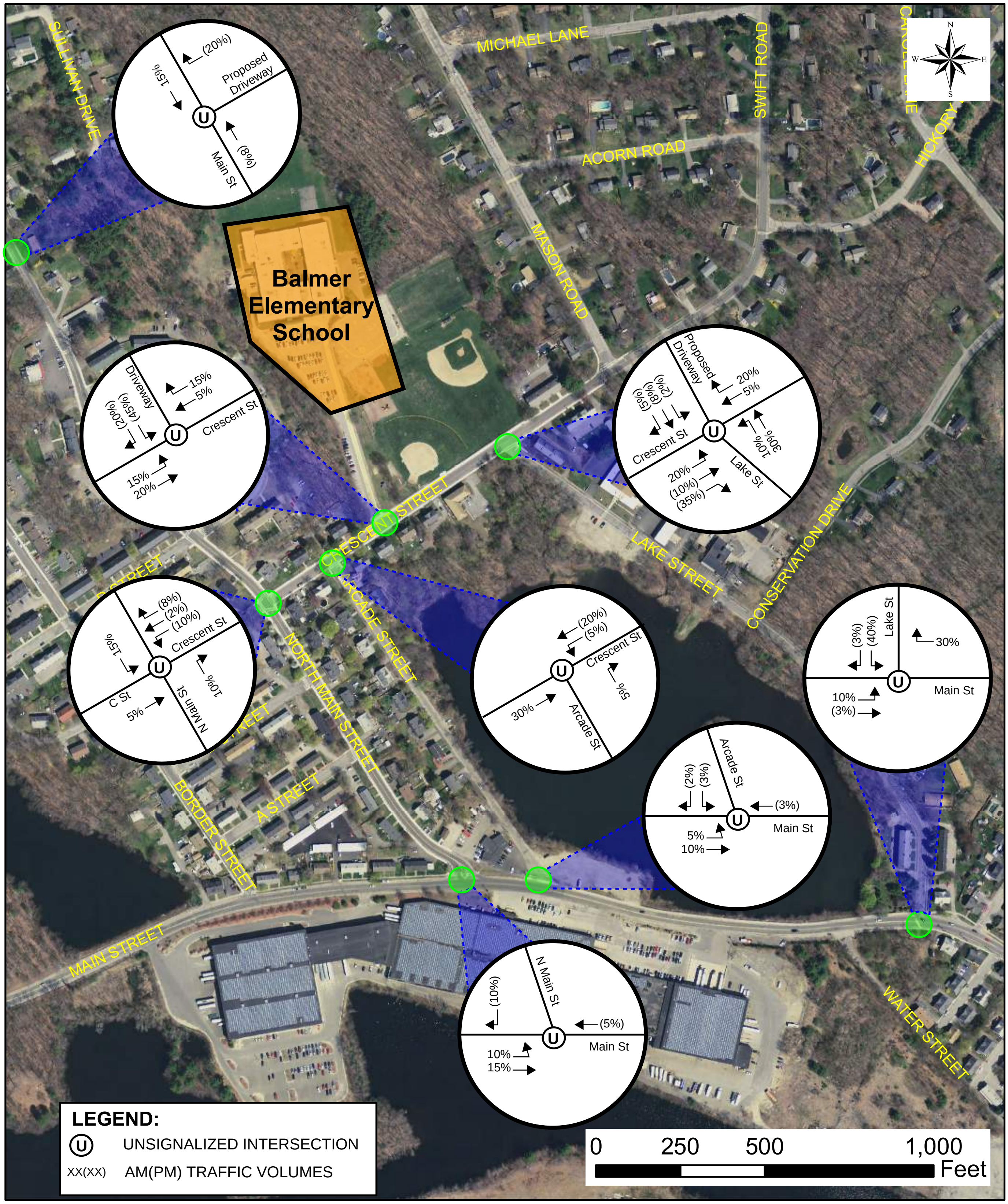
The trips to/from the proposed Balmer Elementary School were distributed and assigned based on the existing travel patterns and logical travel routes, which are based on the existing roadway network both within the Town of Northbridge and the surrounding region.

To properly assess the effect of trips to/from the proposed Balmer Elementary School, the proposed generated drop-off and pick-up trips (Table 6) were assigned to the network. The Trip Distribution Percentages specific to the proposed Balmer Elementary School are shown in Figure 9.

The resultant trip assignment volumes for both the weekday morning and weekday afternoon peak hours were calculated by multiplying the trip distribution by the trip generation from Table 6, and are shown in Figure 10 for the weekday morning and the weekday afternoon peak hours.

*Proposed 2024 Build Volumes – Option A*

For the proposed Balmer Elementary School, the corresponding trip assignment volumes were balanced based on the proposed access and egress to the school, and redistributed to yield the 2024 Build -Option A Volumes. The 2024 Future Build - Option A Volumes for the proposed Balmer Elementary School are shown in Figure 11.




# Figure 9: Trip Distribution - Option A

W. Edward Balmer Elementary School
Northbridge, Massachusetts

Data Source: MassGIS
Nitsch Project #12260

Nitsch Engineering

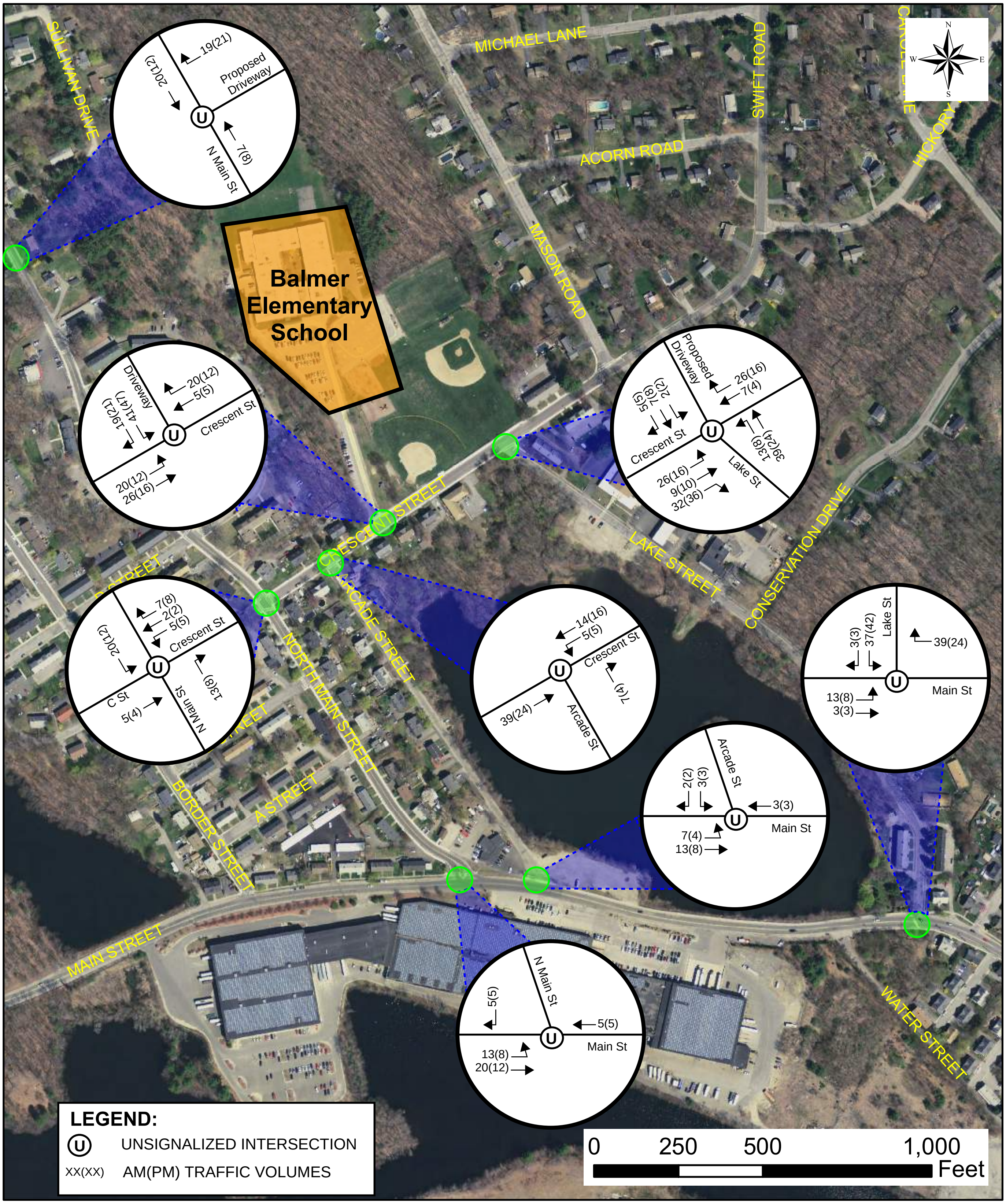



**Figure 10: Trip Assignment - Option A**

W. Edward Balmer Elementary School

Northbridge, Massachusetts

Data Source: MassGIS

Nitsch Project #12260

Nitsch Engineering

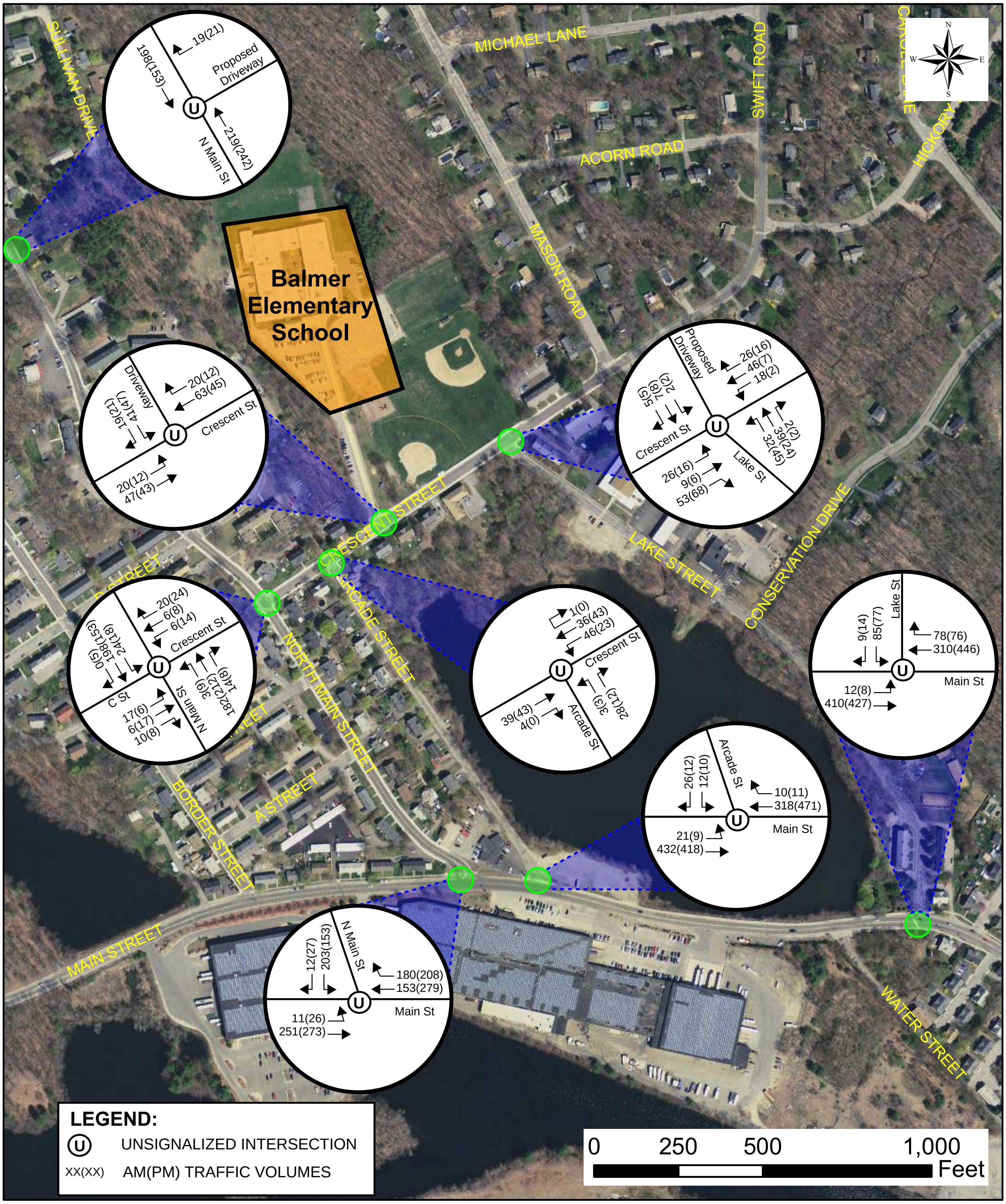



**Figure 11: 2024 Future Volumes - Build Option A**

W. Edward Balmer Elementary School

Northbridge, Massachusetts

Data Source: MassGIS

Nitsch Project #12260

Nitsch Engineering

### 6.3 Trip Generation for New School with 1110 Student Enrollment Option (Option B)

Nitsch Engineering used the Number of Students as the independent variable to base the trip generation rates. The existing school enrolls 569 students with 55 teachers and staff. The enrollment at the new school will be 1110 students for pre-kindergarten through 5th grade, and approximately 80 teachers and staff. This means that the school enrollment will double, or grow by approximately 100%. The proposed school trip generation was calculated by increasing the existing trips entering and exiting the school by 100% to present a conservative analysis of the School Project. Table 6 summarizes vehicle trips generated by the existing and proposed school.

**Table 6 - Proposed Trip Generation - Option B**

| TIME PERIOD | | EXISTING | FUTURE VEHICLE TRIPS BASED ON TRAFFIC COUNTS |
|---|---|---|---|
| AM | ENTERING | 130 | 260 |
| | EXITING | 92 | 184 |
| | TOTAL | 222 | 444 |
| PM | ENTERING | 81 | 162 |
| | EXITING | 104 | 208 |
| | TOTAL | 185 | 370 |

Table 6 shows that the proposed Balmer Elementary School would result in approximately 222 additional entering and exiting trips during morning drop-off, and approximately 185 additional entering and exiting trips during afternoon pick-up. The increase in vehicle trips includes teachers and staff at the new school.

*Trip Distribution, and Assignment – Option B*

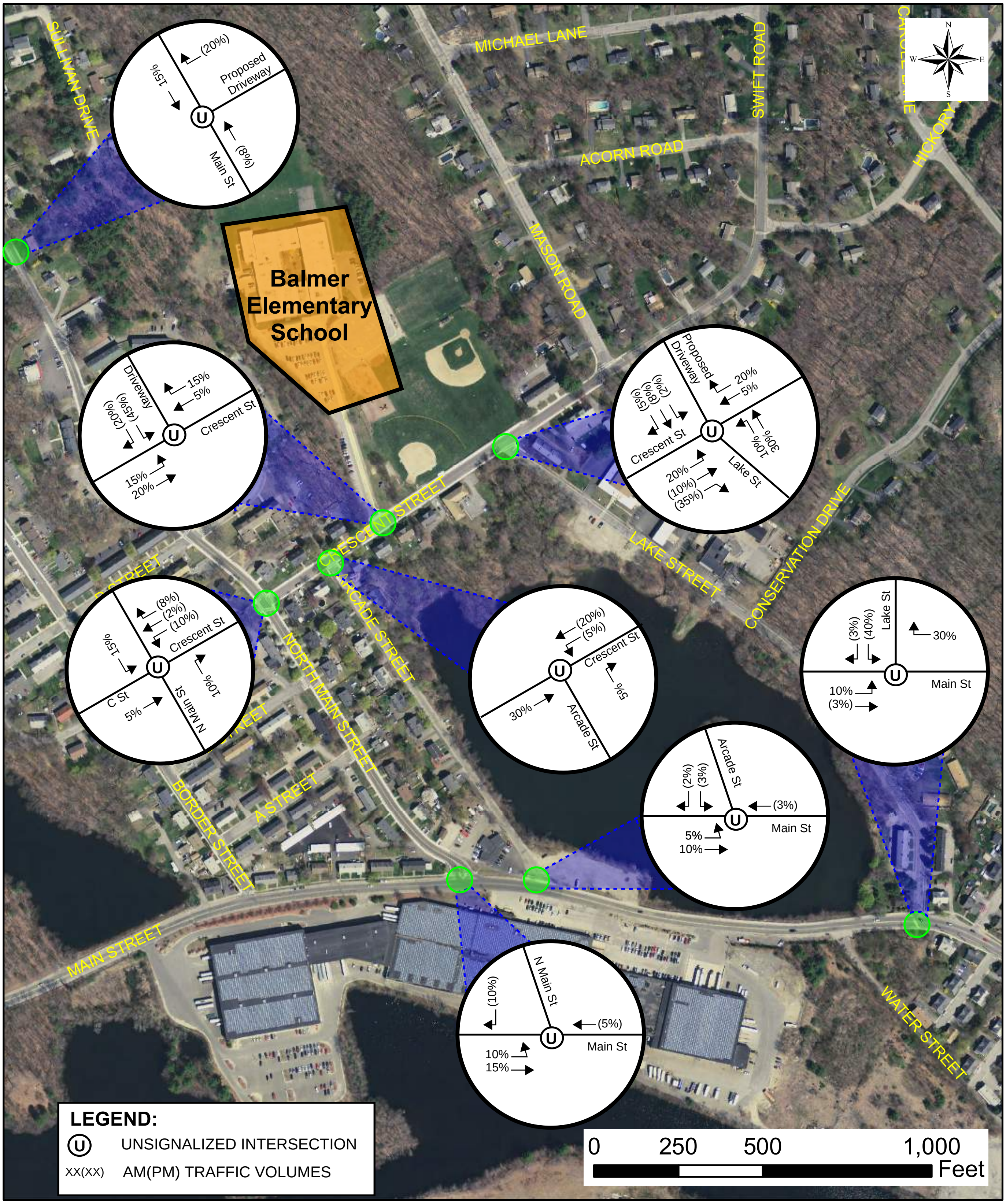
The trips to/from the proposed Balmer Elementary School were distributed and assigned based on the existing travel patterns and logical travel routes, which are based on the existing roadway network both within the Town of Northbridge and the surrounding region.

To properly assess the effect of trips to/from the proposed Balmer Elementary School, the proposed generated drop-off and pick-up trips were assigned to the network. The Trip Distribution Percentages specific to the proposed Balmer Elementary School are shown in Figure 12.

The resultant trip assignment volumes for both the weekday morning and weekday afternoon peak hours were calculated by multiplying the trip distribution by the trip generation from Table 7, and are shown in Figure 13 for the weekday morning and the weekday afternoon peak hours.

*Proposed 2024 Build Volumes – Option B*

For the proposed Balmer Elementary School, the corresponding trip assignment volumes were balanced based on the proposed access and egress to the school, and added to the 2024 No-Build Volumes to yield the 2024 Build Volumes. The 2024 Future Build – Option B Volumes for the proposed Balmer Elementary School are shown in Figure 14.

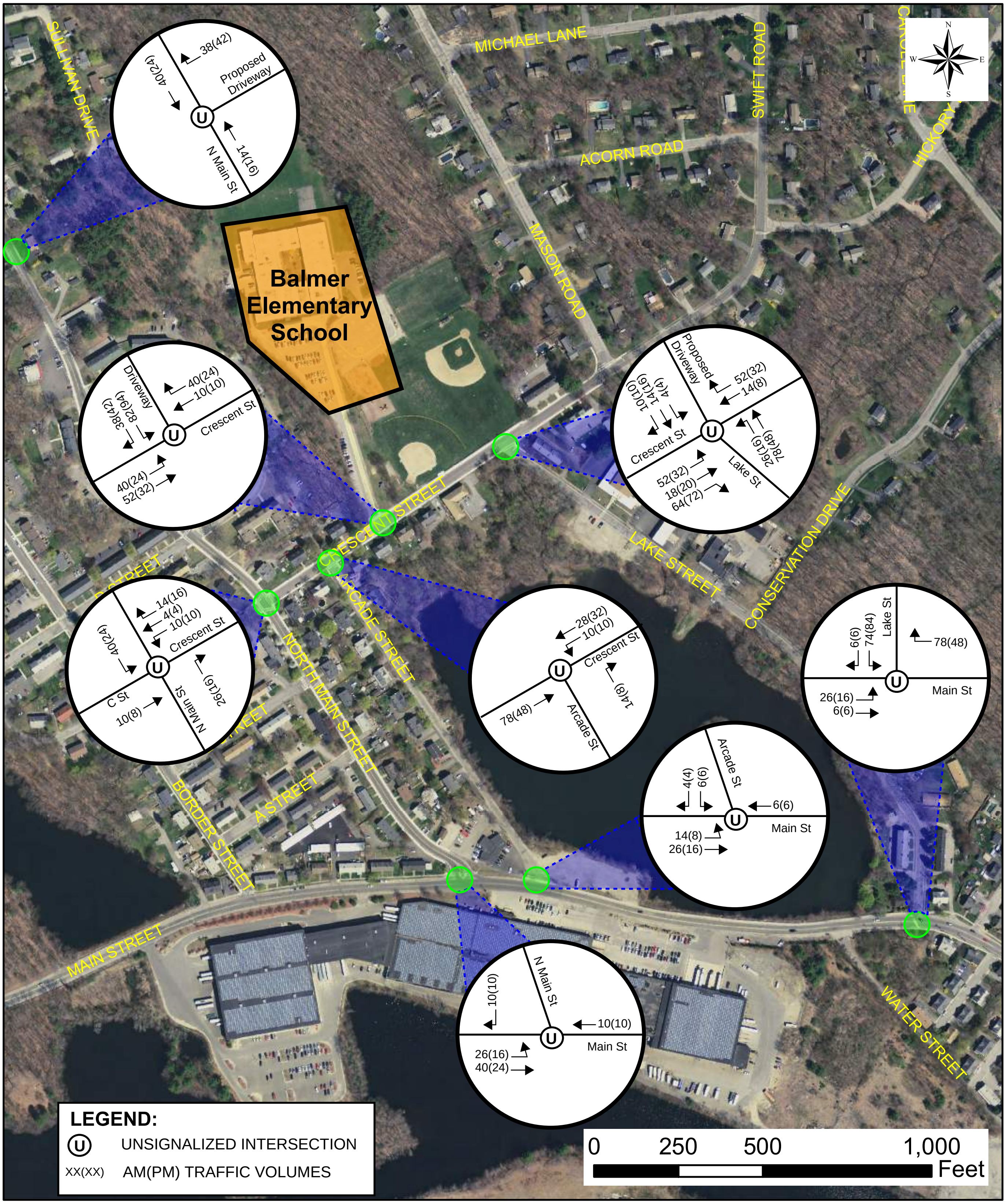



# Figure 12: Trip Distribution - Option B

W. Edward Balmer Elementary School
Northbridge, Massachusetts

Data Source: MassGIS
Nitsch Project #12260

Nitsch Engineering

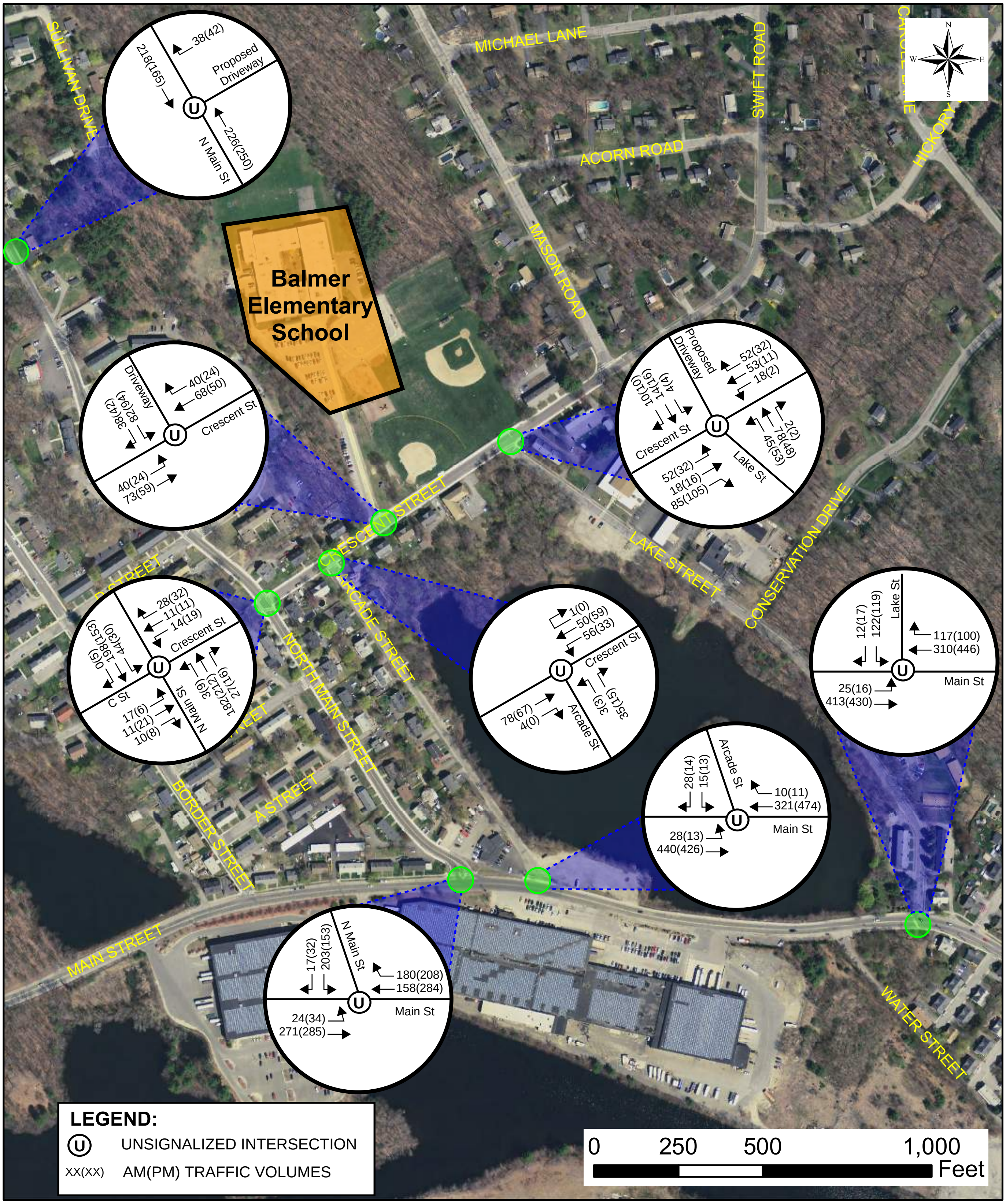



# Figure 13: Trip Assignment - Option B

W. Edward Balmer Elementary School
Northbridge, Massachusetts

Data Source: MassGIS
Nitsch Project #12260

Nitsch Engineering




# Figure 14: 2024 Future Volumes - Build Option B

W. Edward Balmer Elementary School

Northbridge, Massachusetts

Data Source: MassGIS

Nitsch Project #12260

Nitsch Engineering

# 7 OPERATIONS ANALYSIS

## 7.1 Level of Service Criteria

Level of Service (LOS) is a qualitative measure describing operational conditions within a traffic stream. Six (6) LOS criteria are used to describe the quality of traffic flow for any type of facility controls. LOS A represents the best operating conditions, and LOS-F represents the worst operating conditions. Nitsch Engineering analyzed the levels of service for signalized and unsignalized intersections using Synchro 8 software, which is based on the traffic operational analysis methodology of the Highway Capacity Manual[2] (HCM). Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. Table 7 summarizes the relationship between LOS and average control delay for signalized and unsignalized intersections.

**Table 7 - Level of Service Criteria**

| SIGNALIZED INTERSECTIONS | | UNSIGNALIZED INTERSECTIONS | | |
|---|---|---|---|---|
| Level of Service | Control Delay (seconds/vehicle) | Level of Service by Volume-to-Capacity (v/c) Ratio | | Control Delay (seconds/vehicle) |
| | | v/c ≤ 1.0 | v/c > 1.0 | |
| A | 0 to 10 | A | F | 0 to 10 |
| B | >10 to 20 | B | F | >10 to 15 |
| C | >20 to 35 | C | F | >15 to 25 |
| D | >35 to 55 | D | F | >25 to 35 |
| E | >55 to 80 | E | F | >35 to 50 |
| F | >80 | F | F | >50 |
| Source: 2010 Highway Capacity Manual, Transportation Research Board, Washington D.C. 2010 | | | | |

## 7.2 Capacity Analysis

Nitsch Engineering performed traffic analyses to evaluate traffic operations for the 2017 Existing Conditions, 2024 No-Build Conditions, and 2024 Build Conditions during the weekday morning and weekday afternoon peak hours at the study intersections. The analyses depict the volume-to-capacity (v/c) ratio, vehicle delay, LOS, and the 50th/95th percentile vehicle queues.

[2] Highway Capacity Manual, 2010 Edition, Transportation Research Board (TRB), Washington, D.C.

## 7.3 2017 Existing Capacity Analysis

Nitsch Engineering analyzed the 2017 Existing Conditions traffic operations at the study intersections based on the existing traffic counts performed by PDI in November 2017. The Level of Service Summary is shown in Table 8. The analysis worksheets are provided in Appendix A-6.

**Table 8 - Level of Service Summary – 2017 Existing Conditions**

| LOCATION | DIRECTION / MOVEMENT[1] | WEEKDAY MORNING PEAK HOUR | | | | | WEEKDAY EVENING PEAK HOUR | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | V/C[2] | DELAY[3] | LOS[4] | 50th Q[5] | 95th Q[6] | V/C[2] | DELAY[3] | LOS[4] | 50th Q[5] | 95th Q[6] |
| Main St at N. Main St | Main St EB-LT | 0.01 | 0.4 | A | - | 1 | 0.04 | 1.4 | A | - | 3 |
| | Main St WB-TR | 0.21 | 0.0 | A | - | 0 | 0.31 | 0.0 | A | - | 0 |
| | N. Main St SB-LR | 0.51 | 19.4 | C | - | 72 | 0.54 | 24.8 | C | - | 78 |
| Main St at Arcade St | Main St EB-LT | 0.02 | 0.6 | A | - | 1 | 0.01 | 0.3 | A | - | 1 |
| | Main St WB-TR | 0.20 | 0.0 | A | - | 0 | 0.29 | 0.0 | A | - | 0 |
| | Arcade St SB-LR | 0.07 | 12.3 | B | - | 6 | 0.05 | 14.4 | B | - | 4 |
| Main St at Lake St | Main St EB-LT | 0.03 | 0.8 | A | - | 2 | 0.01 | 0.4 | A | - | 1 |
| | Main St WB-TR | 0.26 | 0.0 | A | - | 0 | 0.35 | 0.0 | A | - | 0 |
| | Lake St SB-LR | 0.67 | 36.7 | E | - | 114 | 0.46 | 28.0 | D | - | 58 |
| N. Main St at Crescent St | Ct St EB-LTR | 0.13 | 12.1 | B | - | 12 | 0.09 | 12.3 | B | - | 7 |
| | Crescent St WB-LTR | 0.13 | 11.8 | B | - | 11 | 0.12 | 12.0 | B | - | 10 |
| | N. Main St SB-LTR | 0.02 | 0.9 | A | - | 1 | 0.02 | 1.1 | A | - | 1 |
| | N. Main St NB-LTR | 0.01 | 0.3 | A | - | 0 | 0.01 | 0.4 | A | - | 1 |
| Crescent St at Arcade St | Crescent St EB-TR | 0.04 | 0.0 | A | - | 0 | 0.04 | 0.0 | A | - | 0 |
| | Crescent St WB-LT | 0.08 | 9.4 | A | - | 6 | 0.04 | 3.7 | A | - | 3 |
| | Arcade St NB-LR | 0.11 | 5.6 | A | - | 9 | 0.02 | 9.3 | A | - | 3 |
| Crescent St at School Dr | Crescent St EB-LT | 0.03 | 5.2 | A | - | 2 | 0.01 | 2.9 | A | - | 1 |
| | Crescent St WB-TR | 0.09 | 0.0 | A | - | 0 | 0.06 | 0.0 | A | - | 0 |
| | School Dr SB-LR | 0.12 | 10.1 | B | - | 11 | 0.13 | 9.6 | A | - | 11 |
| Crescent St at Lake St | Crescent St EB-TR | 0.09 | 7.1 | A | - | 0 | 0.10 | 7.0 | A | - | 0 |
| | Crescent St WB-LT | 0.12 | 7.8 | A | - | 0 | 0.03 | 7.4 | A | - | 0 |
| | Lake St NB-LR | 0.10 | 8.0 | A | - | 0 | 0.09 | 7.8 | A | - | 0 |

[1] Volume to Capacity Ratio; [2] Vehicle Delay, measured in seconds; [3] Level Of Service; [4] 50th Percentile Queue (in feet); [5] 95th Percentile Queue (in feet) based upon 22 feet per vehicle; * = Defacto Left Lane; # = volume exceeds capacity, queue may be longer; m = 95th percentile queue is metered by upstream signal; ~ = Volume exceeds capacity, queue is theoretically infinite

### 7.4 2024 No-Build Capacity Analysis

Nitsch Engineering analyzed the 2024 No-Build Conditions traffic operations at the study intersections (See Section 5). The Level of Service Summary is shown in Table 9. The analysis worksheets are provided in Appendix A-6.

**Table 9 - Level of Service Summary – 2024 No - Build Conditions**

| LOCATION | DIRECTION / MOVEMENT1 | WEEKDAY MORNING PEAK HOUR | | | | | WEEKDAY EVENING PEAK HOUR | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | V/C[2] | DELAY[3] | LOS[4] | 50th Q[5] | 95th Q[6] | V/C[2] | DELAY[3] | LOS[4] | 50th Q[5] | 95th Q[6] |
| Main St at N. Main St | Main St EB-LT | 0.01 | 0.5 | A | - | 1 | 0.04 | 1.5 | A | - | 3 |
| | Main St WB-TR | 0.22 | 0.0 | A | - | 0 | 0.33 | 0.0 | A | - | 0 |
| | N. Main St SB-LR | 0.58 | 22.5 | C | - | 90 | 0.63 | 30.5 | D | - | 101 |
| Main St at Arcade St | Main St EB-LT | 0.02 | 0.6 | A | - | 1 | 0.01 | 0.3 | A | - | 1 |
| | Main St WB-TR | 0.21 | 0.0 | A | - | 0 | 0.31 | 0.0 | A | - | 0 |
| | Arcade St SB-LR | 0.08 | 12.8 | B | - | 7 | 0.06 | 15.2 | C | - | 5 |
| Main St at Lake St | Main St EB-LT | 0.03 | 0.8 | A | - | 2 | 0.01 | 0.4 | A | - | 1 |
| | Main St WB-TR | 0.28 | 0.0 | A | - | 0 | 0.35 | 0.0 | A | - | 0 |
| | Lake St SB-LR | 0.79 | 51.9 | E | - | 157 | 0.46 | 34.5 | D | - | 75 |
| N. Main St at Crescent St | Ct St EB-LTR | 0.15 | 12.7 | B | - | 13 | 0.10 | 12.7 | B | - | 8 |
| | Crescent St WB-LTR | 0.13 | 12.1 | B | - | 12 | 0.13 | 12.5 | B | - | 11 |
| | N. Main St SB-LTR | 0.02 | 1.0 | A | - | 1 | 0.02 | 1.1 | A | - | 1 |
| | N. Main St NB-LTR | 0.01 | 0.3 | A | - | 0 | 0.01 | 0.5 | A | - | 1 |
| Crescent St at Arcade St | Crescent St EB-TR | 0.04 | 0.0 | A | - | 0 | 0.04 | 0.0 | A | - | 0 |
| | Crescent St WB-LT | 0.12 | 5.7 | A | - | 10 | 0.04 | 3.5 | A | - | 3 |
| | Arcade St NB-LR | 0.08 | 9.4 | A | - | 7 | 0.02 | 9.3 | A | - | 2 |
| Crescent St at School Dr | Crescent St EB-LT | 0.03 | 4.9 | A | - | 2 | 0.01 | 2.7 | A | - | 1 |
| | Crescent St WB-TR | 0.9 | 0.0 | A | - | 0 | 0.06 | 0.0 | A | - | 0 |
| | School Dr SB-LR | 0.13 | 10.2 | B | - | 11 | 0.13 | 9.6 | A | - | 11 |
| Crescent St at Lake St | Crescent St EB-TR | 0.10 | 7.1 | A | - | 0 | 0.11 | 7.0 | A | - | 0 |
| | Crescent St WB-LT | 0.12 | 7.8 | A | - | 0 | 0.03 | 7.4 | A | - | 0 |
| | Lake St NB-LR | 0.10 | 8.0 | A | - | 0 | 0.10 | 7.9 | A | - | 0 |

[1] Volume to Capacity Ratio; [2] Vehicle Delay, measured in seconds; [3] Level Of Service; [4] 50th Percentile Queue (in feet); [5] 95th Percentile Queue (in feet) based upon 22 feet per vehicle; * = Defacto Left Lane; # = volume exceeds capacity, queue may be longer; m = 95th percentile queue is metered by upstream signal; ~ = Volume exceeds capacity, queue is theoretically infinite

### 7.5 Traffic Signal Warrant

To quantify if additional mitigation would be necessary at the proposed school site, based on the student population, and at the access and egress point of Crescent Street at Lake Street, we performed a Signal Warrant Analysis for both Options A and B.

We performed the warrants based on the procedures outlined in the MUTCD 2009 edition. The MUTCD indicates nine (9) separate conditions under which a traffic signal warrant can be met, and they are shown below.

1. Warrant 1: Eight-Hour Vehicular Volume;
2. Warrant 2: Four-Hour Vehicular Volume;
3. Warrant 3: Peak Hour;
4. Warrant 4: Pedestrian Volume;
5. Warrant 5: School Crossing;
6. Warrant 6: Coordinated Signal System;
7. Warrant 7: Crash Experience;
8. Warrant 8: Roadway Network; and
9. Warrant 9: Intersection Near a Grade Crossing.

Given the criteria set forth in the MUTCD and the assumptions above, the intersection of Crescent Street at Lake Street does not meet any warrants for signalization. We believe that the recommendations outlined in Section 8.2 would represent the best return on investment with regards to handling the estimated traffic to and from the new Balmer Elementary School. The Traffic Signal Warrant Analysis is included in Appendix A-5.

## 7.6 Sight Distance

Stopping Sight Distance (SSD) is the length of the roadway ahead that is visible to the driver and should be sufficiently long to enable a vehicle traveling at or near the design speed to stop before reaching a stationary object in its path. Stopping sight distance is the sum of the distance traversed by the vehicle from the instant the driver sights an object necessitating a stop to the instant the brakes are applied and the distance needed to stop the vehicle from the instant brake application begins.

Intersection Sight Distance (ISD) is the length of the leg of the departure sight triangle along the major road in both directions for a vehicle stopped on the minor road waiting to depart. The critical departure sight triangles for the school driveways are for traffic approaching from either the left or right for left turns from the school driveways onto Crescent Street and North Main Street. The methods for determining the sight distances needed by drivers approaching intersections are based on the same principles as stopping sight distance, but incorporate modified assumptions based on observed driver behavior at intersections.

The SSD and ISD values associated with a given design speed are shown in Table 10. The site distance evaluations for the intersection are shown in Table 11.

**Table 10 - Sight Distance Criteria**

| DESIGN SPEED | DESIGN STOPPING SIGHT DISTANCE VALUE[1] (SSD) | RECOMMENDED INTERSECTION SIGHT DISTANCE VALUE[2] (ISD) |
|---|---|---|
| (MPH) | (FT) | (FT) |
| 15 | 80 | 170 |
| 20 | 115 | 225 |
| 25 | 155 | 280 |
| 30 | 200 | 335 |
| 35 | 250 | 390 |
| 40 | 305 | 445 |
| 45 | 360 | 500 |
| 50 | 425 | 555 |
| 55 | 495 | 610 |
| 60 | 570 | 665 |
| 65 | 645 | 720 |
| 70 | 730 | 775 |
| 75 | 820 | 830 |
| 80 | 910 | 885 |

Source: *A Policy on Geometric Design of Highways and Streets, AASHTO, Washington DC (2011)*

[1]Design value based on a grade of less than 3%, a brake reaction distance predicted on a time of 2.5 seconds and a deceleration rate of 11.2 ft/s$^2$

[2]Recommended value based on Case B1 - a stopped passenger car to turn left onto a two-lane highway with no median and grades 3% or less

The higher of the posted, or 85th percentile, speed was used to calculate the minimum sight distance to be conservative.

At the intersections of Crescent Street and the school driveways, both the SSD and ISD values meet the minimum values for turning vehicles onto Crescent Street and for both eastbound and westbound traffic on Crescent Street.

At the intersection of North Main Street and the school driveway, both the SSD and ISD values meet the minimum values for turning vehicles onto North Main Street and for both northbound and southbound traffic on North Main Street.

**Table 11 - Proposed Sight Distance Evaluation**

| INTERSECTION | POSTED SPEED (MPH) | 85th PERCENTILE SPEED (MPH) | MINIMUM (FEET)[1,2] | MEASURED (FEET) | OBSTRUCTION |
|---|---|---|---|---|---|
| *Crescent Street at School East Driveway* | | | | | |
| Stopping Sight Distance: | | | | | |
| Crescent Street Eastbound | 20 | 28 | 182 | >450 | |
| Crescent Street Westbound | 20 | 30 | 368 | >450 | |
| Intersection Sight Distance: | | | | | |
| Looking to the right from Driveway | 20 | 28 | 345 | >450 | |
| Looking to the left from Driveway | 20 | 30 | 345 | >450 | |
| *Crescent Street at School West Driveway* | | | | | |
| Stopping Sight Distance: | | | | | |
| Crescent Street Eastbound | 20 | 28 | 182 | >450 | |
| Crescent Street Westbound | 20 | 30 | 368 | >450 | |
| Intersection Sight Distance: | | | | | |
| Looking to the right from Driveway | 20 | 28 | 345 | >450 | |
| Looking to the left from Driveway | 20 | 30 | 345 | >450 | |
| *North Main Street at School North Driveway* | | | | | |
| Stopping Sight Distance: | | | | | |
| North Main Street Southbound | 25 | 35 | 250 | 600 | |
| North Main Street Northbound | 25 | 35 | 390 | 466 | |
| Intersection Sight Distance: | | | | | |
| Looking to the right from Driveway | 25 | 35 | 250 | 600 | |
| Looking to the left from Driveway | 25 | 35 | 390 | 466 | |

[1] Table 3-1. Stopping Sight Distance on Level Roadways

[2] Table 9-6. Design Intersection Sight Distance - Case B1, Left Turn from Stop

### 7.7 2024 Build Capacity Analysis - Option A

Nitsch Engineering analyzed the 2024 Build Conditions traffic operations at the study intersections for reconstruction of a new Balmer Elementary School on the existing site with a student population of 510 (see Section 6). The Level of Service Summary is shown in Table 12. The analysis worksheets are provided in Appendix A-6.

**Table 12 - Level of Service Summary – 2024 Build Option A Conditions**

| LOCATION | DIRECTION / MOVEMENT[1] | WEEKDAY MORNING PEAK HOUR | | | | | WEEKDAY EVENING PEAK HOUR | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | V/C[2] | DELAY[3] | LOS[4] | 50th Q[5] | 95th Q[6] | V/C[2] | DELAY[3] | LOS[4] | 50th Q[5] | 95th Q[6] |
| Main St at N. Main St | Main St EB-LT | 0.01 | 0.4 | A | - | 1 | 0.03 | 1.0 | A | - | 2 |
| | Main St WB-TR | 0.21 | 0.0 | A | - | 0 | 0.31 | 0.0 | A | - | 0 |
| | N. Main St SB-LR | 0.47 | 18.6 | C | - | 62 | 0.51 | 23.7 | C | - | 70 |
| Main St at Arcade St | Main St EB-LT | 0.02 | 0.6 | A | - | 1 | 0.01 | 0.3 | A | - | 1 |
| | Main St WB-TR | 0.21 | 0.0 | A | - | 0 | 0.31 | 0.0 | A | - | 0 |
| | Arcade St SB-LR | 0.08 | 12.8 | B | - | 7 | 0.06 | 15.2 | C | - | 5 |
| Main St at Lake St | Main St EB-LT | 0.01 | 0.4 | A | - | 1 | 0.01 | 0.3 | A | - | 1 |
| | Main St WB-TR | 0.25 | 0.0 | A | - | 0 | 0.33 | 0.0 | A | - | 0 |
| | Lake St SB-LR | 0.30 | 19.9 | C | - | 31 | 0.34 | 24.0 | C | - | 37 |
| N. Main St at Crescent St | Ct St EB-LTR | 0.07 | 12.4 | B | - | 5 | 0.06 | 12.1 | B | - | 5 |
| | Crescent St WB-LTR | 0.07 | 11.1 | B | - | 5 | 0.08 | 11.5 | B | - | 7 |
| | N. Main St SB-LTR | 0.02 | 1.0 | A | - | 1 | 0.01 | 0.9 | A | - | 1 |
| | N. Main St NB-LTR | 0.00 | 0.0 | A | - | 0 | 0.01 | 0.4 | A | - | 1 |
| Crescent St at Arcade St | Crescent St EB-TR | 0.03 | 0.0 | A | - | 0 | 0.03 | 0.0 | A | - | 0 |
| | Crescent St WB-LT | 0.03 | 4.2 | A | - | 2 | 0.02 | 2.6 | A | - | 1 |
| | Arcade St NB-LR | 0.03 | 8.7 | A | - | 3 | 0.02 | 8.7 | A | - | 1 |
| Crescent St at School Dr | Crescent St EB-LT | 0.01 | 2.3 | A | - | 1 | 0.01 | 1.7 | A | - | 1 |
| | Crescent St WB-TR | 0.05 | 0.0 | A | - | 0 | 0.04 | 0.0 | A | - | 0 |
| | School Dr SB-LR | 0.08 | 9.6 | A | - | 6 | 0.08 | 9.4 | A | - | 7 |
| Crescent St at New School Dr/Lake St | Crescent St EB-LTR | 0.02 | 2.3 | A | - | 1 | 0.01 | 1.4 | A | - | 1 |
| | Crescent St WB-LTR | 0.01 | 1.6 | A | - | 1 | 0.0 | 0.6 | A | - | 0 |
| | School Dr SB-LTR | 0.02 | 9.9 | A | - | 2 | 0.02 | 9.4 | A | - | 1 |
| | Lake St NB-LTR | 0.11 | 10.8 | B | - | 10 | 0.09 | 9.8 | A | - | 8 |
| N. Main St at School Dr | N. Main St SB -T | 0.13 | 0.0 | A | - | 0 | 0.10 | 0.0 | A | - | 0 |
| | N. Main St NB -T | 0.14 | 0.0 | A | - | 0 | 0.15 | 0.0 | A | - | 0 |
| | School Dr WB-LR | 0.03 | 9.6 | A | - | 2 | 0.03 | 9.8 | A | - | 2 |

[1] Volume to Capacity Ratio; [2] Vehicle Delay, measured in seconds; [3] Level Of Service; [4] 50th Percentile Queue (in feet); [5] 95th Percentile Queue (in feet) based upon 22 feet per vehicle; * = Defacto Left Lane; # = volume exceeds capacity, queue may be longer; m = 95th percentile queue is metered by upstream signal; ~ = Volume exceeds capacity, queue is theoretically infinite

## 7.8 2024 Build Capacity Analysis - Option B

Nitsch Engineering analyzed the 2024 Build Conditions traffic operations at the study intersections for reconstruction of a new Balmer Elementary School on the existing site with a student population of 1110 (see Section 6). The Level of Service Summary is shown in Table 13. The analysis worksheets are provided in Appendix A-6.

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**Table 13 - Level of Service Summary – 2024 Build Option B Conditions**

| LOCATION | DIRECTION / MOVEMENT[1] | WEEKDAY MORNING PEAK HOUR | | | | | WEEKDAY EVENING PEAK HOUR | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | V/C[2] | DELAY[3] | LOS[4] | 50th Q[5] | 95th Q[6] | V/C[2] | DELAY[3] | LOS[4] | 50th Q[5] | 95th Q[6] |
| Main St at N. Main St | Main St EB-LT | 0.02 | 0.9 | A | - | 2 | 0.04 | 1.3 | A | - | 3 |
| | Main St WB-TR | 0.22 | 0.0 | A | - | 0 | 0.31 | 0.0 | A | - | 0 |
| | N. Main St SB-LR | 0.52 | 21.1 | C | - | 74 | 0.55 | 25.9 | D | - | 78 |
| Main St at Arcade St | Main St EB-LT | 0.03 | 0.8 | A | - | 2 | 0.01 | 0.4 | A | - | 1 |
| | Main St WB-TR | 0.21 | 0.0 | A | - | 0 | 0.31 | 0.0 | A | - | 0 |
| | Arcade St SB-LR | 0.10 | 13.3 | B | - | 8 | 0.08 | 15.9 | C | - | 7 |
| Main St at Lake St | Main St EB-LT | 0.02 | 0.7 | A | - | 2 | 0.02 | 0.5 | A | - | 1 |
| | Main St WB-TR | 0.27 | 0.0 | A | - | 0 | 0.35 | 0.0 | A | - | 0 |
| | Lake St SB-LR | 0.46 | 25.9 | D | - | 58 | 0.55 | 33.7 | D | - | 77 |
| N. Main St at Crescent St | Crescent St WB-LTR | 0.09 | 13.4 | B | - | 7 | 0.08 | 12.7 | B | - | 6 |
| | C St EB-LTR | 0.10 | 12.0 | B | - | 8 | 0.12 | 12.0 | B | - | 10 |
| | N. Main St SB-LTR | 0.04 | 1.7 | A | - | 3 | 0.02 | 1.4 | A | - | 2 |
| | N. Main St NB-LTR | 0.00 | 0.1 | A | - | 0 | 0.01 | 0.3 | A | - | 1 |
| Crescent St at Arcade St | Crescent St EB-TR | 0.05 | 0.0 | A | - | 0 | 0.04 | 0.0 | A | - | 0 |
| | Crescent St WB-LT | 0.04 | 4.1 | A | - | 3 | 0.02 | 2.8 | A | - | 2 |
| | Arcade St NB-LR | 0.04 | 9.0 | A | - | 3 | 0.02 | 8.9 | A | - | 2 |
| Crescent St at School Dr | Crescent St EB-LT | 0.03 | 2.8 | A | - | 2 | 0.02 | 2.2 | A | - | 1 |
| | Crescent St WB-TR | 0.07 | 0.0 | A | - | 0 | 0.05 | 0.0 | A | - | 0 |
| | School Dr SB-LR | 0.17 | 10.6 | B | - | 15 | 0.17 | 10.2 | A | - | 16 |
| Crescent St at Lake St | Crescent St EB-LTR | 0.04 | 2.7 | A | - | 3 | 0.02 | 1.7 | A | - | 2 |
| | Crescent St WB-LTR | 0.01 | 1.2 | A | - | 1 | 0.0 | 0.3 | A | - | 0 |
| | School Dr SB-LTR | 0.05 | 10.9 | B | - | 4 | 0.04 | 10.0 | B | - | 3 |
| | Lake St NB-LTR | 0.24 | 13.2 | B | - | 23 | 0.16 | 11.0 | B | - | 14 |
| N. Main St at School Dr | N. Main St SB -T | 0.14 | 0.0 | A | - | 0 | 0.11 | 0.0 | A | - | 0 |
| | N. Main St NB -T | 0.14 | 0.0 | A | - | 0 | 0.16 | 0.0 | A | - | 0 |
| | School Dr WB-LR | 0.05 | 9.8 | A | - | 4 | 0.06 | 10.0 | A | - | 5 |

[1] Volume to Capacity Ratio; [2] Vehicle Delay, measured in seconds; [3] Level Of Service; [4] 50th Percentile Queue (in feet); [5] 95th Percentile Queue (in feet) based upon 22 feet per vehicle; * = Defacto Left Lane; # = volume exceeds capacity, queue may be longer; m = 95th percentile queue is metered by upstream signal; ~ = Volume exceeds capacity, queue is theoretically infinite

### 7.9 Parking

The School parking lot, when complete, will provide 116 striped parking spaces for Option A (248 striped parking spaces for Option B) that include 5 accessible spaces (7 accessible spaces for Option B). Based on existing parking utilization, approximately 15 spaces for visitors are planned which may be available for parental parking (40 stationary spaces for visitors are planned for Option B). This number exceeds the number of parking spaces required by the Institute of Transportation Engineers (ITE) Parking Generation for land code 520 to facilitate parental parking during drop-off and pick-up times (see Table 14). The curb at the car loop is approximately 1440 linear feet, which can accommodate an additional 72 vehicles. Option B has two drop-off areas: the Grade 1-5 car loop snakes around behind the school and is approximately 1600 linear feet, which can accommodate 80 vehicles; and PK-K drop-off curb in front of the school is approximately 290 linear feet, which can accommodate 15 vehicles.

**Table 14 - Proposed Parking Summary**

| Option | Parking Spaces Provided | Parking Spaces Required by Institute of Transportation Engineers' Parking Generation for Land Use Code 520 |
|---|---|---|
| A | 116 Striped (5 Accessible) | 95 |
| | 72 Live Drop-Off | |
| B | 248 Striped (7 Accessible) | 189 |
| | 95 Live Drop-Off | |

## 8 CONCLUSIONS AND RECOMMENDATIONS

### 8.1 Conclusions

Nitsch Engineering has been retained by Dore & Whittier Architects to prepare a qualitative assessment of safety, traffic circulation, and traffic access/egress, associated with the feasibility study and schematic design for the proposed Balmer Elementary School reconstruction project located in Northbridge, Massachusetts.

The Project includes construction of a new Balmer Elementary School building and grounds on the site of the existing school, located at 21 Crescent St in Northbridge.

The following four (4) potential options are being considered:

5. B2, Grades 2-4, New Construction at the Rear of the Site (510 enrollment);
6. C2, Addition/Renovation of the existing Balmer School, keeping the Academic Wing (1,030 enrollment K-5, plus 80 PK, 1,110 total);
7. C3, Grades PK-5, New Construction at the Rear of the Site (1,030 enrollment K-5, plus 80 PK, 1,110 total); and
8. C5, Grades PK-5, New Construction, Front of the Site (1,030 enrollment K-5, plus 80 PK, 1,110 total).

The evaluation was based on the two (2) enrollment options of 510 and 1,110 students, because all four (4) options have identical access and egress points.

The new school (regardless of the option) will continue to be accessed from Crescent Street using two driveways. The access and egress to the school (parental drop-off and pick-up, as well as teachers and staff) will occur from the new driveway opposite Lake Street to the circular driveway at the new main entrance. The existing school driveway will also be used for pre-kindergarten parental drop-off and pick-up as well as access to the parking lots.

The bus and delivery traffic will arrive through the new driveway opposite Lake Street. The bus drop-off/pick-up will occur at the designated bus lane located south of the school.

A new one-way driveway will also allow vehicular egress to North Main Street.

*New Balmer Elementary School with 510 Enrollment Option (Option A)*

We examined the future conditions, as well as site circulation with respect to the projected student drop-off and pick-up at the new Balmer Elementary School. This option is not expected to increase traffic volumes at the School and adjacent streets during the weekday morning drop-off and weekday afternoon pick-up, but it will redistribute the existing traffic because of the new driveways providing additional access and egress to the school. The parking lot will contain 116 spaces, of which approximately 15 spaces may be available for parental parking, based on existing parking utilization. The curb at the car loop is approximately 1440 linear feet, which can accommodate an additional 72 vehicles.

*New Balmer Elementary School with 1110 Enrollment Option (Option B)*

We examined the future conditions, as well as site circulation with respect to the projected student drop-off and pick-up at the new Balmer Elementary School. This option would result in a doubling of traffic volumes at the school during the weekday morning drop-off and weekday afternoon pick-up, totaling approximately 222 trips

(130 entering and 92 exiting) during the weekday morning drop-off, and approximately 185 trips (81 entering and 104 exiting) during the weekday afternoon pick-up. The parking lot will contain 248 spaces, of which approximately 40 spaces may be available for parental parking, based on existing parking utilization. The curbs at the car loops combined can accommodate an additional 95 vehicles.

At the request of Dore & Whittier Architects, Nitsch ran two scenarios to test the effectiveness of the proposed N Main driveway on overall site traffic efficiency: one model with the drive, and one without. On the model with the driveway, the maximum time delay at the two other exits from the site (onto Crescent Street) was approximately 11 seconds with a queue length of 16 feet (approximately one car length). Without the driveway, the time delay remains approximately 11 seconds, however the queue length increases to 2o feet (approximately two car lengths). This analysis shows that the effect of the proposed third drive on the function of the other two intersections is almost negligible, and the modeled results are certainly within reasonable level-of-service parameters for the two Crescent Street access drives.

Under either scenario, the one existing and two proposed new access drives have sight distances within safe guidelines.

### 8.2 Recommendations

Based on the proposed options for reconstruction of Balmer Elementary School, Nitsch Engineering offers the following recommendations regardless of the chosen option:

- Continue designating Crescent Street as a School Zone under State and local statute, and install the appropriate School Zone signs.
- The sidewalks and accessible ramps along Crescent Street are in acceptable condition. However, pedestrian experience along Crescent Street should be enhanced by improvements to the pedestrian and student crossing signage, and providing advanced warning signing of school entering and exiting traffic.
- Enhance the pedestrian experience along Lake and Arcade Streets by considering improvements to the sidewalks and accessible ramps where needed to accommodate safe walks to school, and providing advanced warning signing of school entering and exiting traffic.
- Reach out to parents via social media to increase safety awareness.

# W. EDWARD BALMER ELEMENTARY SCHOOL

DORE & WHITTIER ARCHITECTS, INC.

D&W PROJECT # 17-759

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## WHITINSVILLE, MA 01588

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### ENVIRONMENTAL CONSULTANT

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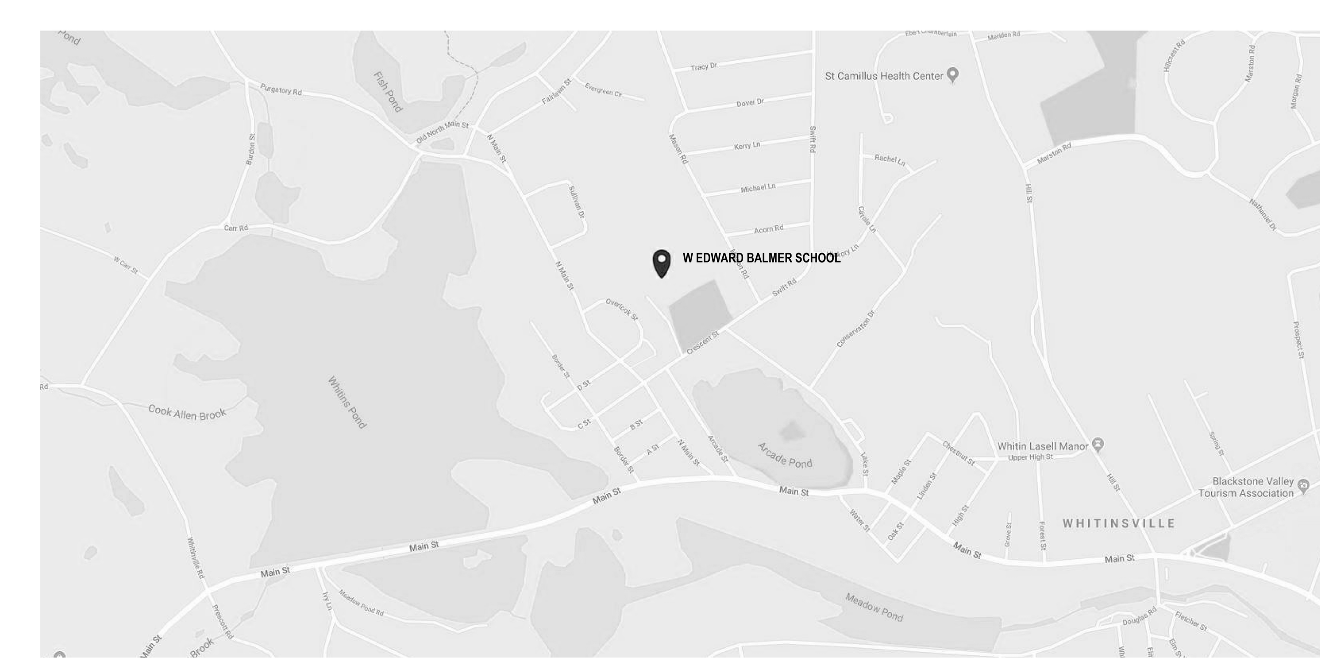
| SHEET NUMBER | SHEET NAME |
|---|---|
| CIVIL | |
| C1.00 | Civil Notes, Legend, & Abbreviations |
| C2.00 | Overall Site Preparation & Utility Demolition Plan |
| C2.01 | Site Preparation & Utility Demolition Plan |
| C2.02 | Site Preparation & Utility Demolition Plan |
| C2.03 | Site Preparation & Utility Demolition Plan |
| C2.04 | Site Utility Demolition Plan - South |
| C2.05 | Site Utility Demolition Plan - North |
| C2.06 | Site Utility Demolition Plan – North Main Street |
| C3.00 | Overall Roadway Layout Plan |
| C3.01 | Roadway Layout Plan South |
| C3.02 | Roadway Layout Plan North |
| C3.03 | Roadway Signage and Striping Plan South |
| C3.04 | Roadway Signage and Striping Plan North |
| C3.05 | Building Location Plan |
| C4.00 | Overall Site Grading Plan |
| C4.01 | Site Grading Plan |
| C4.02 | Site Grading Plan |
| C4.03 | Site Grading Plan |
| C5.00 | Overall Site Utility Plan |
| C5.01 | Site Utility Plan South |
| C5.02 | Site Utility Plan North |
| C5.03 | Site Utility Plan – North Main Street |
| C5.04 | Site Drainage Plan South |
| C5.05 | Site Drainage Plan North |
| C5.06 | 36” Drain Line Plan and Profile |
| C6.07 | Retaining Wall Sections |
| C7.00 | Site Preparation Details |
| C7.01 | Site Utility Details |
| C7.02 | Site Material Details |
| C7.03 | Site Drainage Details |
| C7.04 | Site Drainage Details |
| LANDSCAPE | |
| L2.10 | Overall Site Plan |
| L2.20 | Layout and Materials Plan |
| L2.30 | Layout and Materials Plan |
| L2.40 | Layout and Materials Enlargement Plan |
| L3.10 | Planting Plan |
| L3.20 | Planting Plan |
| L4.10 | Details |
| L4.20 | Details |
| L4.30 | Details |
| L4.40 | Details |
| L4.50 | Details |
| ARCHITECTURAL | |
| AP1.10 | Phasing Plan |
| AP1.20 | Phasing Plan |
| AP1.30 | Phasing Plan |
| A4.01 | Axon Views |
| A4.10 | Overall Exterior Elevations |
| A4.11 | Exterior Elevations |
| A4.12 | Exterior Elevations |
| A4.13 | Exterior Elevations |
| ELECTRICAL | |
| LC1.0 | Site Lighting Calculation Plan |
| E0.04 | Electrical Site Details |
| E0.05 | Electrical Site Details |

## LOCATION MAP




## PLANNING BOARD SUBMISSION 04/09/2019

## DEMOLITION NOTES:

1. SITE PREPARATION AND DEMOLITION SHALL INCLUDE THOSE AREAS WITHIN THE LIMIT OF WORK LINE AS SHOWN ON THE CONTRACT DOCUMENTS.
2. ANY AREA OUTSIDE THE LIMIT OF WORK THAT IS DISTURBED SHALL BE RESTORED TO ITS ORIGINAL CONDITION AT NO ADDITIONAL COST TO THE OWNER.
3. CONSULT ALL OF THE DRAWINGS AND SPECIFICATIONS FOR COORDINATION REQUIREMENTS BEFORE COMMENCING DEMOLITION.
4. THE CONTRACTOR SHALL COORDINATE SITE DEMOLITION EFFORTS WITH ALL TRADES THAT MAY BE AFFECTED BY THE WORK.
5. ALL ITEMS REQUIRING REMOVAL SHALL BE REMOVED TO FULL DEPTH TO INCLUDE BASE MATERIAL AND FOOTINGS OR FOUNDATIONS AS REQUIRED TO FACILITATE CONSTRUCTION, AND LEGALLY DISPOSED OF OFF-SITE BY CONTRACTOR.
6. UTILITY PIPES DESIGNATED TO BE ABANDONED IN PLACE SHALL BE PLUGGED AT THEIR ENDS WITH WATERTIGHT BRICK MASONRY OR CEMENT MORTAR WITH A MINIMUM THICKNESS OF 8 INCHES.
7. UTILITY PIPES DESIGNATED TO BE REMOVED SHALL CONSIST OF THE COMPLETE REMOVAL AND DISPOSAL OF THE ENTIRE LENGTH OF PIPE AND BACKFILL AND 95% COMPACTION OF THE VOID WITH ORDINARY BORROW. WHEN THE VOID IS WITHIN THE FOOTPRINT OF THE NEW BUILDING, GRAVEL BORROW SHALL BE USED TO BACKFILL THE VOID.
8. UTILITY STRUCTURES DESIGNATED TO BE ABANDONED IN PLACE SHALL HAVE THEIR CAST IRON CASTINGS REMOVED AND DISPOSED, INLET AND OUTLET PIPES PLUGGED, THE BOTTOM OF THE STRUCTURES SHALL BE BROKEN, THE VOID OF THE STRUCTURES SHALL BE BACKFILLED AND COMPACTED TO 95% WITH ORDINARY BORROW OR FLOWABLE FILL, AND THE TOP OF THE STRUCTURE SHALL BE REMOVED SO THAT IT IS AT LEAST 36 INCHES BELOW FINISH GRADE.
9. UTILITY STRUCTURES DESIGNATED TO BE REMOVED SHALL CONSIST OF THE REMOVAL AND DISPOSAL OF CAST IRON CASTINGS, PLUGGING OF INLET AND OUTLET PIPES, REMOVAL OF THE STRUCTURE, AND BACKFILL AND 95% COMPACTION OF THE VOID WITH ORDINARY BORROW. WHEN HE VOID IS WITHIN THE FOOTPRINT OF THE NEW BUILDING, GRAVEL BORROW SHALL BE USED TO BACKFILL THE VOID.
10. ALL DEBRIS GENERATED DURING SITE PREPARATION ACTIVITIES SHALL BE LEGALLY DISPOSED OF OFF SITE.
11. AT ALL LOCATIONS WHERE EXISTING CURBING, CONCRETE PAVEMENT OR BITUMINOUS CONCRETE ROADWAY ABUTS NEW CONSTRUCTION, THE EDGE OF THE EXISTING CURB OR PAVEMENT SHALL BE SAW CUT TO A CLEAN, SMOOTH EDGE.
12. EXTEND DESIGNATED LIMIT OF WORK AS NECESSARY TO ACCOMPLISH ROUGH GRADING, EROSION CONTROL, TREE PROTECTION, AND SITE WORK AS REQUIRED BY THESE DRAWINGS AND SPECIFICATIONS.
13. THE CONTRACTOR SHALL REMOVE FROM THE SITE ALL RUBBISH AND DEBRIS FOUND THEREON. STORAGE OF SUCH MATERIALS ON THE PROJECT SITE WILL NOT BE PERMITTED. THE CONTRACTOR SHALL LEAVE THE SITE IN SAFE, CLEAN, AND LEVEL CONDITION UPON COMPLETION OF THE SITE DEMOLITION WORK.
14. REMOVE AND STOCKPILE ALL EXISTING SITE LIGHTS, BENCHES, TRASH RECEPTACLES, TRAFFIC SIGNS, GRANITE CURB, AND OTHER SITE IMPROVEMENTS WITHIN LIMIT OF WORK LINE UNLESS OTHERWISE NOTED.
15. ALL EXISTING TREES AND SHRUBS TO REMAIN SHALL BE PROTECTED AND MAINTAINED THROUGHOUT THE TIME OF CONSTRUCTION, AS SPECIFIED AND DIRECTED BY THE LANDSCAPE ARCHITECT.
16. BEFORE ANY TREES OR SHRUBS ARE REMOVED, THE CONTRACTOR SHALL ARRANGE A CONFERENCE ON THE SITE WITH THE OWNER OR OWNER'S REPRESENTATIVE TO IDENTIFY TREES AND SHRUBS THAT ARE TO BE REMOVED, AS WELL AS THOSE WHICH ARE TO BE PROTECTED. DO NOT COMMENCE CLEARING OPERATIONS WITHOUT A CLEAR UNDERSTANDING OF EXISTING CONDITIONS TO BE PRESERVED.
17. THE CONTRACTOR SHALL REMOVE FROM THE AREA OF CONSTRUCTION PAVEMENT, CONCRETE, CURBING, POLES AND FOUNDATIONS, ISLANDS, TREE BERMS AND OTHER FEATURES WITHIN THE LIMITS OF CONSTRUCTION AS REQUIRED TO ACCOMMODATE NEW CONSTRUCTION WHETHER SPECIFIED ON THE DRAWINGS OR NOT.

## EARTH MOVING AND GRADING NOTES:

1. ALL TOPSOIL ENCOUNTERED WITHIN THE WORK AREA SHALL BE STRIPPED TO ITS FULL DEPTH AND STOCKPILED FOR REUSE. EXCESS TOPSOIL SHALL BE REMOVED FROM THE SITE UNLESS OTHERWISE DIRECTED BY THE OWNER. TOPSOIL PILES SHALL REMAIN SEGREGATED FROM EXCAVATED SUBSURFACE SOIL MATERIALS.
2. GRADES WITHIN HANDICAP PARKING SPACES AND ACCESS AISLES SHALL NOT EXCEED 1.5% IN ANY DIRECTION.
3. CROSS SLOPES OF ALL PEDESTRIAN WALKS SHALL NOT EXCEED 1.5%.
4. RUNNING SLOPE OF ALL PEDESTRIAN WALKS SHALL NOT EXCEED 4.5%, UNLESS OTHERWISE NOTED.
5. THE CONTRACTOR SHALL EXERCISE CAUTION IN ALL EXCAVATION ACTIVITY DUE TO POSSIBLE EXISTENCE OF UNRECORDED UTILITY LINES.
6. ALL PAVED AREAS MUST PITCH TO DRAIN AT A MINIMUM OF 1% UNLESS OTHERWISE NOTED.
7. PROVIDE POSITIVE DRAINAGE AWAY FROM FACE OF BUILDINGS AT ALL LOCATIONS.
8. PITCH EVENLY BETWEEN CONTOUR LINES AND BETWEEN SPOT GRADES. SPOT GRADE ELEVATIONS TAKE PRECEDENCE OVER CONTOUR LINES.
9. ALL PROPOSED TOP OF CURB ELEVATIONS ARE SIX INCHES (6") ABOVE BOTTOM OF CURB ELEVATIONS UNLESS OTHERWISE NOTED. ALL PROPOSED TOP OF CAPE COD BERM ELEVATIONS ARE FOUR INCHES (4") ABOVE BOTTOM OF CURB ELEVATION UNLESS OTHERWISE NOTED.
10. THE CONTRACTOR SHALL BLEND NEW GRADING SMOOTHLY INTO EXISTING GRADING AT LIMITS OF GRADING.
11. WHERE NEW PAVING MEETS EXISTING PAVING, MEET LINE AND GRADE OF EXISTING PAVING WITH SMOOTH TRANSITION BETWEEN EXISTING AND NEW SURFACES.
12. THE CONTRACTOR SHALL VERIFY EXISTING GRADES IN THE FIELD AND REPORT ANY DISCREPANCIES IMMEDIATELY TO THE ARCHITECT OR OWNER'S REPRESENTATIVE PRIOR TO STARTING WORK.
13. PITCH TOPS OF ALL WALLS AT ONE-EIGHTH INCH (1/8") PER FOOT FROM BACK OF WALL TO FACE OF WALL.
14. SURPLUS MATERIALS SHALL BE REMOVED FROM THE SITE UNLESS DIRECTED BY THE OWNER OR OWNER'S REPRESENTATIVE. REFER TO EARTHWORK SPECIFICATIONS.
15. ANY AREAS OUTSIDE OF THE LIMIT OF WORK THAT ARE DISTURBED SHALL BE RESTORED BY THE CONTRACTOR TO THE PRE-CONSTRUCTION CONDITION/GRADE AT NO COST TO THE OWNER.
16. EXCAVATION REQUIRED WITHIN PROXIMITY OF EXISTING UTILITY LINES SHALL BE DONE BY HAND. CONTRACTOR SHALL REPAIR ANY DAMAGE TO EXISTING UTILITY LINES OR STRUCTURES INCURRED DURING CONSTRUCTION OPERATIONS AT NO ADDITIONAL COST TO COMMONWEALTH/OWNER.

## GENERAL NOTES:

1. TOPOGRAPHIC DATA, PROPERTY LINE INFORMATION, AND EXISTING SITE FEATURES WERE OBTAINED FROM A PLAN ENTITLED "COMPILED EXISTING CONDITIONS", PREPARED BY NITSCH ENGINEERING., DATED SEPTEMBER 29, 2017.
2. FLOODPLAIN INFORMATION WAS OBTAINED FROM THE FLOOD INSURANCE RATE MAP (FIRM) NO.25027C1006E DATED 7/11/2011. THE SITE IS IN ZONE X AREA OF MINIMAL FLOOD RISK.
3. THE CONTRACTOR SHALL COMPLY WITH MASSACHUSETTS GENERAL LAWS CHAPTER 82, SECTION 40, AS AMENDED, WHICH STATES THAT NO ONE MAY EXCAVATE IN THE COMMONWEALTH OF MASSACHUSETTS EXCEPT IN AN EMERGENCY WITHOUT 72 HOURS NOTICE, EXCLUSIVE OF SATURDAYS, SUNDAYS, AND LEGAL HOLIDAYS, TO NATURAL GAS PIPELINE COMPANIES, AND MUNICIPAL UTILITY DEPARTMENTS THAT SUPPLY GAS, ELECTRICITY, TELEPHONE, OR CABLE TELEVISION SERVICE IN OR TO THE CITY OR TOWN WHERE THE EXCAVATION IS TO BE MADE. THE CONTRACTOR SHALL CALL "DIG SAFE" AT 1-888-DIG-SAFE.
4. THE CONTRACTOR SHALL COMPLY WITH MASSACHUSETTS GENERAL LAWS CHAPTER 82A, ALSO REFERRED TO AS JACKIE'S LAW, AS DETAILED IN SECTION 520 CMR 14.00 OF THE CODE OF MASSACHUSETTS REGULATIONS.
5. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE FEDERAL, STATE, AND LOCAL LAWS, RULES, REGULATIONS AND SAFETY CODES IN THE CONSTRUCTION OF ALL IMPROVEMENTS.
6. THE LOCATIONS AND ELEVATIONS OF ALL EXISTING UTILITIES ARE APPROXIMATE AND AND ALL UTILITIES MAY NOT BE SHOWN. PRESENCE AND LOCATIONS OF ALL UTILITIES WITHIN THE LIMIT OF WORK MUST BE DETERMINED BY THE CONTRACTOR PRIOR TO COMMENCEMENT OF CONSTRUCTION ACTIVITY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR IDENTIFYING AND CONTACTING THE CONTROLLING AUTHORITIES AND/OR UTILITY COMPANIES RELATIVE TO THE LOCATIONS AND ELEVATIONS OF THEIR LINES. THE CONTRACTOR SHALL KEEP A RECORD OF ANY DISCREPANCIES OR CHANGES IN THE LOCATIONS OF ANY UTILITIES SHOWN OR ENCOUNTERED DURING CONSTRUCTION. ANY DISCREPANCIES SHALL BE REPORTED TO THE OWNER AND NITSCH ENGINEERING. ANY DAMAGE RESULTING FROM THE FAILURE OF THE CONTRACTOR TO MAKE THESE DETERMINATIONS AND CONTACTS SHALL BE BORNE BY THE CONTRACTOR.
7. THE CONTRACTOR SHALL, THROUGHOUT CONSTRUCTION, TAKE ADEQUATE PRECAUTIONS TO PROTECT ALL WALKS, GRADING, SIDEWALKS AND SITE DETAILS OUTSIDE OF THE LIMIT OF WORK AS DEFINED ON THE DRAWINGS AND SHALL REPAIR AND REPLACE OR OTHERWISE MAKE GOOD AS DIRECTED BY THE ENGINEER OR OWNER'S DESIGNATED REPRESENTATIVE ANY SUCH OR OTHER DAMAGE SO CAUSED.
8. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR JOB SITE SAFETY AND ALL CONSTRUCTION MEANS AND METHODS.
9. PRIOR TO BEGINNING CONSTRUCTION, THE CONTRACTOR SHALL BECOME FAMILIAR WITH THE SITE AND CONSTRUCTION DOCUMENTS TO DEVELOP A THOROUGH UNDERSTANDING OF THE PROJECT, INCLUDING ANY SPECIAL CONDITIONS AND CONSTRAINTS.
10. IT IS THE CONTRACTOR'S RESPONSIBILITY TO BECOME FAMILIAR WITH THE PROJECT SITE AND TO VERIFY ALL CONDITIONS IN THE FIELD AND REPORT DISCREPANCIES BETWEEN PLANS AND ACTUAL CONDITIONS TO THE OWNER OR OWNER'S REPRESENTATION IMMEDIATELY.
11. THE CONTRACTOR SHALL CONDUCT ALL NECESSARY CONSTRUCTION NOTIFICATIONS AND APPLY FOR AND OBTAIN ALL NECESSARY CONSTRUCTION PERMITS.
12. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE ESTABLISHMENT AND USE OF ALL VERTICAL AND HORIZONTAL CONSTRUCTION CONTROLS.
13. ELEVATIONS REFER TO NAVD88 GEOID 12A VERTICAL BASED ON GPS RTK OBSERVATIONS.
14. THE CONTRACTOR SHALL COMPLY WITH THE ORDER OF CONDITIONS DATED XXXX XX, XXXX AND ISSUED BY THE XXXX CONSERVATION COMMISSION (DEP #XXX-XXX).
15. FOR SOIL INFORMATION REFER TO GEOTECHNICAL REPORT.

## EROSION AND SEDIMENT CONTROL NOTES:

1. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH THE LATEST EDITION OF THE "MASSACHUSETTS EROSION AND SEDIMENT CONTROL GUIDELINES FOR URBAN AND SUBURBAN AREAS" PREPARED BY DEPARTMENT OF ENVIRONMENTAL PROTECTION, BUREAU OF RESOURCE PROTECTION, AND THE CURRENT NPDES GENERAL PERMIT FOR STORMWATER DISCHARGES FROM CONSTRUCTION ACTIVITIES.
2. MEANS OF EROSION AND SEDIMENT PROTECTION AS NOTED ON THE DRAWINGS INDICATE MINIMUM RECOMMENDED PROVISIONS. THE CONTRACTOR IS RESPONSIBLE FOR FINAL SELECTION AND PLACEMENT OF EROSION AND SEDIMENTATION CONTROLS BASED ON ACTUAL SITE CONDITIONS AND CONSTRUCTION CONDITIONS. ADDITIONAL MEANS OF PROTECTION SHALL BE PROVIDED BY THE CONTRACTOR AS REQUIRED FOR CONTINUED OR UNFORESEEN EROSION PROBLEMS, OR AS DIRECTED BY CONTROLLING MUNICIPAL AUTHORITIES, AT NO ADDITIONAL EXPENSE TO THE OWNER.
3. AN EROSION CONTROL BARRIER SHALL BE INSTALLED ALONG THE EDGE OF PROPOSED DEVELOPMENT AS INDICATED IN THE PLAN PRIOR TO COMMENCEMENT OF DEMOLITION OR CONSTRUCTION OPERATIONS.
4. SEDIMENT CONTROL MEASURES SHALL BE ADJUSTED TO MEET FIELD CONDITIONS AT THE TIME OF AND DURING ALL PHASES OF CONSTRUCTION AND BE CONSTRUCTED PRIOR TO AND IMMEDIATELY AFTER ANY GRADING OR DISTURBANCE OF EXISTING SURFACE MATERIAL ON THE SITE.
5. AFTER ANY SIGNIFICANT RAINFALL (GREATER THAN 0.25 INCH OF RAINFALL WITHIN 24 HOURS), SEDIMENT CONTROL STRUCTURES SHALL BE INSPECTED FOR INTEGRITY. ANY DAMAGE SHALL BE CORRECTED IMMEDIATELY.
6. PERIODIC INSPECTION AND MAINTENANCE OF ALL SEDIMENT CONTROL STRUCTURES SHALL BE PROVIDED TO ENSURE THAT THE INTENDED PURPOSE IS ACCOMPLISHED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL SEDIMENT LEAVING THE LIMIT OF WORK. SEDIMENT CONTROL MEASURES SHALL BE IN WORKING CONDITION AT THE END OF EACH WORKING DAY.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PREVENTING SEDIMENT FROM ENTERING ANY STORM DRAINAGE SYSTEM AND FROM BEING CONVEYED TO ANY WETLAND RESOURCE AREA, PUBLIC WAYS, ABUTTING PROPERTY, OR OUTSIDE OF THE PROJECT LIMITS.
8. THE CONTRACTOR SHALL PROTECT ALL DRAINAGE SWALES AND GROUND SURFACES WITHIN THE LIMIT OF WORK SHALL FROM EROSIVE CONDITIONS. STRAW BALE, CRUSHED STONE OR EQUIVALENT CHECK DAMS ARE TO BE PROVIDED AT A MAXIMUM OF TWO HUNDRED (200) FOOT SPACING, OR LESS AS SITE-SPECIFIC CONDITIONS WARRANT, WITHIN ALL DRAINAGE SWALES AND DITCHES AND AT UPSTREAM SIDES OF ALL DRAINAGE INLETS.
9. ALL STOCK PILES SHALL BE PROTECTED AND LOCATED A MINIMUM OF 100' FROM EXISTING WETLAND RESOURCE AREAS & WITHIN THE LIMIT OF WORK.
10. ANY SEDIMENT TRACKED ONTO PAVED AREAS SHALL BE SWEPT AT THE END OF EACH WORKING DAY.
11. ALL SEDIMENT RETAINED BY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE LEGALLY DISPOSED OF OFF SITE.
12. TEMPORARY DIVERSION DITCHES DIVERSION DITCHES, PERMANENT DITCHES, CHANNELS, EMBANKMENTS , AND ANY DENUDED SURFACE THAT WILL BE EXPOSED FOR A PERIOD OF 14 CALENDAR DAYS OR MORE SHALL BE CONSIDERED CRITICAL VEGETATION AREAS. THESE AREAS SHALL BE STABILIZED/PROTECTED WITH APPROPRIATE EROSION CONTROL MATTING OR OTHER EROSION CONTROL METHODS.
13. DUST SHALL BE CONTROLLED BY WATERING OR OTHER APPROVED METHODS AS DIRECTED BY THE PERMITTING AUTHORITY OR OWNER.
14. THE CONTRACTOR SHALL USE TEMPORARY SEEDING, MULCHING OR OTHER APPROVED STABILIZATION MEASURES TO PROTECT EXPOSED AREAS DURING PROLONGED CONSTRUCTION OR OTHER LAND DISTURBANCE. STOCKPILES THAT WILL BE EXPOSED FOR LONGER THAN 14 DAYS SHALL BE STABILIZED.
15. THE CONTRACTOR IS RESPONSIBLE FOR REMOVAL OF ALL EROSION AND SEDIMENT CONTROLS AT THE COMPLETION OF SITE CONSTRUCTION, BUT ONLY WHEN DIRECTED BY THE CITY/TOWN OF XXXX CONSERVATION AGENT. STABILIZE OR SEED BARE AREAS LEFT AFTER EROSION CONTROL REMOVAL.

## UTILITY NOTES:

1. ALL UTILITY CONNECTIONS ARE SUBJECT TO THE APPROVAL OF, AND GRANTING OF PERMITS BY, THE LOCAL MUNICIPALITY IT SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO OBTAIN ALL PERMITS AND APPROVALS RELATED TO UTILITY WORK PRIOR TO COMMENCEMENT OF CONSTRUCTION.
2. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR OBTAINING ALL PERMISSIONS FOR, AND FOR CONDUCTING ALL PREPARATIONS RELATED TO, WORK AFFECTING ANY UTILITIES WITHIN THE JURISDICTION OF ANY NON-MUNICIPAL UTILITY COMPANY, INCLUDING BUT NOT LIMITED TO ELECTRIC, TELEPHONE, AND/OR GAS. THE CONTRACTOR SHALL NOTIFY ALL APPROPRIATE AGENCIES, DEPARTMENTS, AND UTILITY COMPANIES, IN WRITING, AT LEAST 7 DAYS (OR PER UTILITY COMPANY REQUIREMENT) AND NOT MORE THAN 30 DAYS PRIOR TO ANY CONSTRUCTION.
3. THE CONTRACTOR SHALL MAINTAIN UTILITIES SERVICING BUILDINGS AND FACILITIES WITHIN OR OUTSIDE THE PROJECT LIMIT UNLESS THE INTERRUPTION OF SERVICE IS COORDINATED WITH THE OWNER.
4. ALL WATER, SEWER, AND DRAIN WORK SHALL BE PERFORMED ACCORDING TO THE REQUIREMENTS AND STANDARD SPECIFICATIONS OF THE LOCAL MUNICIPALITY.
5. GAS, TELECOMMUNICATIONS AND ELECTRIC SERVICES ARE TO BE DESIGNED BY EACH UTILITY COMPANY IN COORDINATION WITH THE MECHANICAL, ELECTRIC, AND PLUMBING CONSULTANTS.
6. THE CONTRACTOR SHALL COORDINATE CONSTRUCTION ACTIVITIES OF NEW UTILITIES WITH GAS, TELECOMMUNICATION AND ELECTRICAL SERVICES.
7. INSTALL WATER LINES WITH A MINIMUM OF FIVE FEET OF COVER AND A MAXIMUM OF SEVEN FEET COVER FROM THE FINAL DESIGN GRADES.
8. MAINTAIN 10 FEET HORIZONTAL SEPARATION AND 18 INCHES VERTICAL SEPARATION (WATER OVER SEWER) BETWEEN SEWER AND WATER LINES. WHEREVER THERE IS LESS THAN 10 FEET OF HORIZONTAL SEPARATION AND 18 INCHES OF VERTICAL SEPARATION BETWEEN A PROPOSED OR EXISTING SEWER LINE TO REMAIN AND A PROPOSED OR EXISTING WATER LINE TO REMAIN BOTH WATER MAIN AND SEWER MAIN SHALL BE CONSTRUCTED OF MECHANICAL JOINT CEMENT LINED DUCTILE IRON PIPE FOR A DISTANCE OF 10-FEET ON EITHER SIDE OF THE CROSSING. ONE (1) FULL LENGTH OF WATER PIPE SHALL BE CENTERED OVER THE SEWER AT THE CROSSING.
9. THE CONTRACTOR SHALL MAINTAIN ALL EXISTING UTILITIES EXCEPT THOSE NOTED TO BE ABANDONED AND/OR REMOVED & DISPOSED.
10. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR TRENCHING, BACKFILLING, AND SURFACE RESTORATION FOR GAS UTILITY SYSTEMS.
11. ALL ON SITE UTILITIES SHALL BE INSTALLED UNDERGROUND UNLESS OTHERWISE NOTED.
12. ALL EXISTING AND PROPOSED MANHOLE FRAMES, COVERS, VALVES, CLEANOUTS, ETC. SHALL BE RAISED TO FINISHED GRADE PRIOR TO FINAL PAVING CONSTRUCTION.
13. ALL GRATES IN WALKWAYS SHALL BE ADA COMPLIANT.

## PROPOSED LEGEND

| | |
|---|---|
| | LIMIT OF WORK |
| D | EXISTING UTILITY TO BE ABANDONED, REMOVED AND DISPOSED IF IN CONFLICT WITH NEW SITE IMPROVEMENTS, OR AS INDICATED ON DRAWINGS |
| | EROSION CONTROL BARRIER |
| x | CONSTRUCTION FENCE |
| W | DOMESTIC WATER PIPE |
| FP | FIRE PROTECTION PIPE |
| S | SANITARY SEWER PIPE |
| D | STORM DRAIN PIPE |
| G | GAS PIPE |
| E | ELECTRIC DUCTBANK |
| T/C | TELECOM DUCTBANK |
| | INLET PROTECTION |
| | ELEVATION CONTOURS |
| | MATCH LINE |
| | CENTERLINE |
| CO | CLEANOUT |
| AD | AREA DRAIN |
| AB | ACCESS BASIN |
| DMH | DRAIN MANHOLE |
| WQS | WATER QUALITY STRUCTURE |
| CB | CATCH BASIN |
| DCB | DOUBLE CATCH BASIN |
| WQI | WATER QUALITY INLET |
| SMH | SEWER MANHOLE |
| TMH | TELECOM MANHOLE |
| EMH | ELECTRIC MANHOLE |
| WV | WATER VALVE |
| HYD | FIRE HYDRANT |

## ABBREVIATIONS

| | |
|---|---|
| AB | ACCESS BASIN |
| AD | AREA DRAIN |
| BC | BOTTOM OF CURB ELEVATION |
| CB | CATCH BASIN |
| CCB | CAPE COD BERM |
| CI | CAST IRON |
| CL | CENTER LINE |
| CO | CLEANOUT |
| COP | CENTER OF PIPE |
| CPP | CORRUGATED POLYETHYLENE PIPE |
| DCB | DOUBLE CATCH BASIN |
| DI | DUCTILE IRON PIPE CEMENT LINED |
| DMH | DRAIN MANHOLE |
| EHH | ELECTRIC HANDHOLE |
| EJ | EXPANSION JOINT |
| EMH | ELECTRIC MANHOLE |
| FD | FOUNDATION DRAIN |
| FFE | FINISHED FLOOR ELEVATION |
| HP | HIGH POINT |
| HYD | FIRE HYDRANT |
| INV | INVERT ELEVATION |
| LF | LINEAR FEET |
| LOW | LIMIT OF WORK |
| LP | LOW POINT |
| LW | LAB WASTE |
| M&P | MAINTAIN AND PROTECT |
| NIC | NOT IN CONTRACT |
| OC | ON CENTER |
| OCS | OUTLET CONTROL STRUCTURE |
| PD | PERIMETER DRAIN |
| PERF | PERFORATED |
| PVC | POLYVINYL CHLORIDE PIPE |
| R&D | REMOVE AND DISPOSE |
| R&S | REMOVE AND STOCKPILE |
| RD | ROOF DRAIN |
| RIM | RIM ELEVATION |
| SMH | SEWER MANHOLE |
| SS | SEWER SERVICE |
| TC | TOP OF CURB ELEVATION |
| THH | TELECOM HANDHOLE |
| TMH | TELECOM MANHOLE |
| TOP | TOP OF PIPE |
| TOD | TOP OF DUCT BANK |
| TYP | TYPICAL |
| UD | UNDERDRAIN |
| USD | UNDERSLAB DRAIN |
| VGC | VERTICAL GRANITE CURB |
| WQI | WATER QUALITY INLET |
| WQS | WATER QUALITY STRUCTURE |
| WV | WATER VALVE |

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NITSCH PROJECT #12260

Planning Board Submission

| REVISION: | Date: |
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DATE: 04/09/2019
SCALE: N/A

SHEET TITLE: CIVIL NOTES, LEGEND, & ABBREVIATIONS

SHEET #: C1.00


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NITSCH PROJECT #12260
COMMONWEALTH OF MASSACHUSETTS
SANDRA A. BROCK
CIVIL
No. 39417
REGISTERED PROFESSIONAL ENGINEER
4/3/2019
4-3-19



Planning Board Submission

| REVISION: | Date: |
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DATE: 04/09/2019
SCALE: 1"=40'

SHEET TITLE:
OVERALL SITE PREPARATION & UTILITY DEMOLITION PLAN

SHEET #:
C2.00


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DATE: 04/09/2019
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SHEET TITLE:
SITE SEDIMENTATION & EROSION CONTROL PLAN - SOUTH

SHEET #:
C2.01


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SHEET TITLE:
SITE SEDIMENTATION & EROSION CONTROL PLAN - NORTH

SHEET #: C2.02


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SHEET TITLE:
SITE SEDIMENTATION & EROSION CONTROL PLAN - N. MAIN ST.

SHEET #:
C2.03


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DATE: 04/09/2019
SCALE: 1"=20'

SHEET TITLE: SITE UTILITY DEMOLITION PLAN - SOUTH

SHEET #: C2.04


NOTE:
MAINTAIN AND PROTECT ALL UTILITIES SERVICING THE EXISTING SCHOOL BUILDING UNTIL THE PROPOSED BUILDING HAS BEEN COMPLETED AND THE EXISTING BUILDING HAS BEEN ABANDONED.

SCALE:
1" = 20'

20 10 0 20 40

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SHEET TITLE:
SITE UTILITY DEMOLITION PLAN - NORTH

SHEET #:
C2.05


NOTE:
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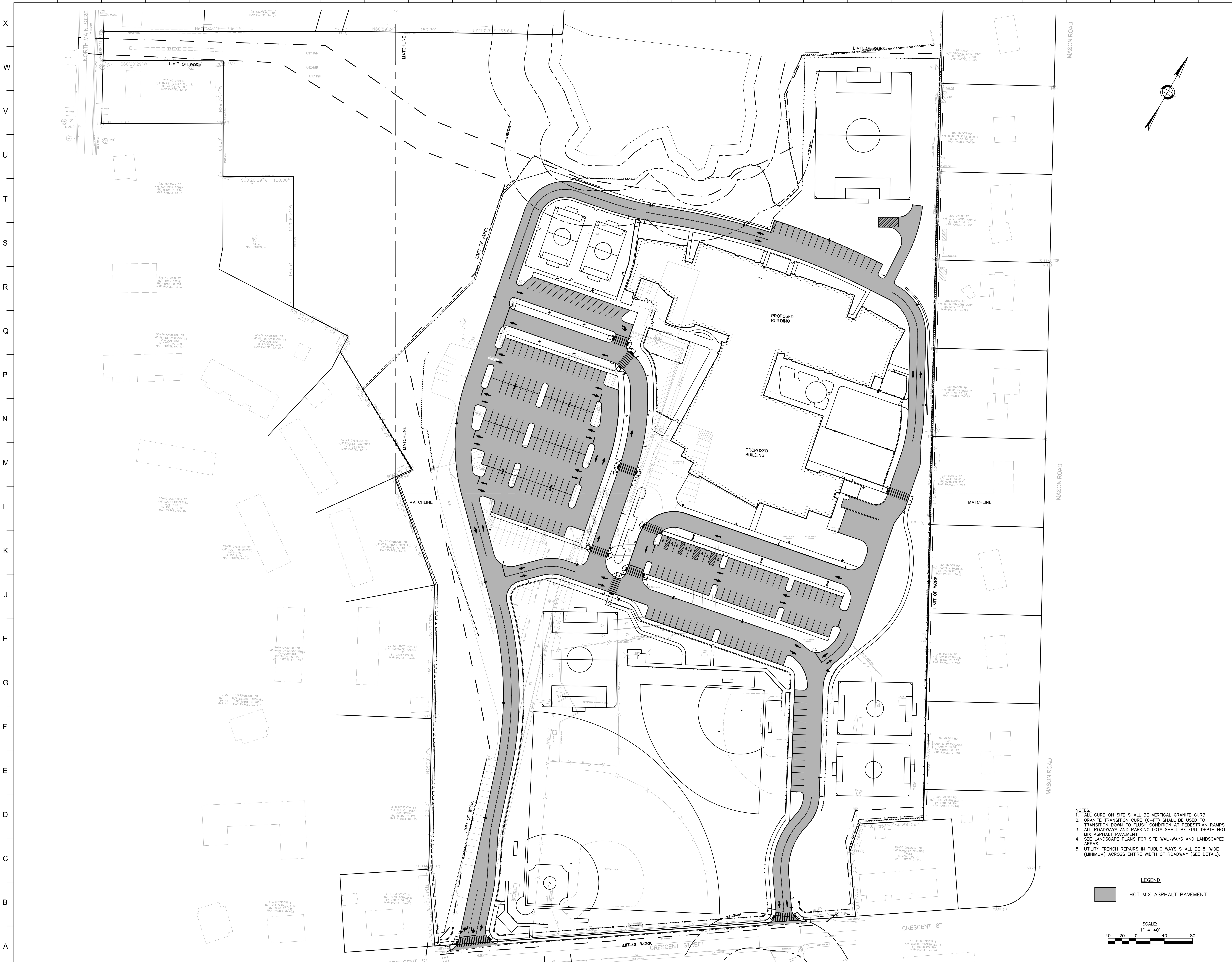
SHEET TITLE:
SITE UTILITY DEMOLITION PLAN - NORTH MAIN STREET

SHEET #: C2.06




NOTES:
1. ALL CURB ON SITE SHALL BE VERTICAL GRANITE CURB
2. GRANITE TRANSITION CURB (6–FT) SHALL BE USED TO TRANSITION DOWN TO FLUSH CONDITION AT PEDESTRIAN RAMPS.
3. ALL ROADWAYS AND PARKING LOTS SHALL BE FULL DEPTH HOT MIX ASPHALT PAVEMENT.
4. SEE LANDSCAPE PLANS FOR SITE WALKWAYS AND LANDSCAPED AREAS.
5. UTILITY TRENCH REPAIRS IN PUBLIC WAYS SHALL BE 8' WIDE (MINIMUM) ACROSS ENTIRE WIDTH OF ROADWAY (SEE DETAIL).

LEGEND

HOT MIX ASPHALT PAVEMENT

SCALE:
1" = 40'

40 20 0 40 80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4/3/2019
4.3.19



Planning Board Submission

| REVISION: | Date: |
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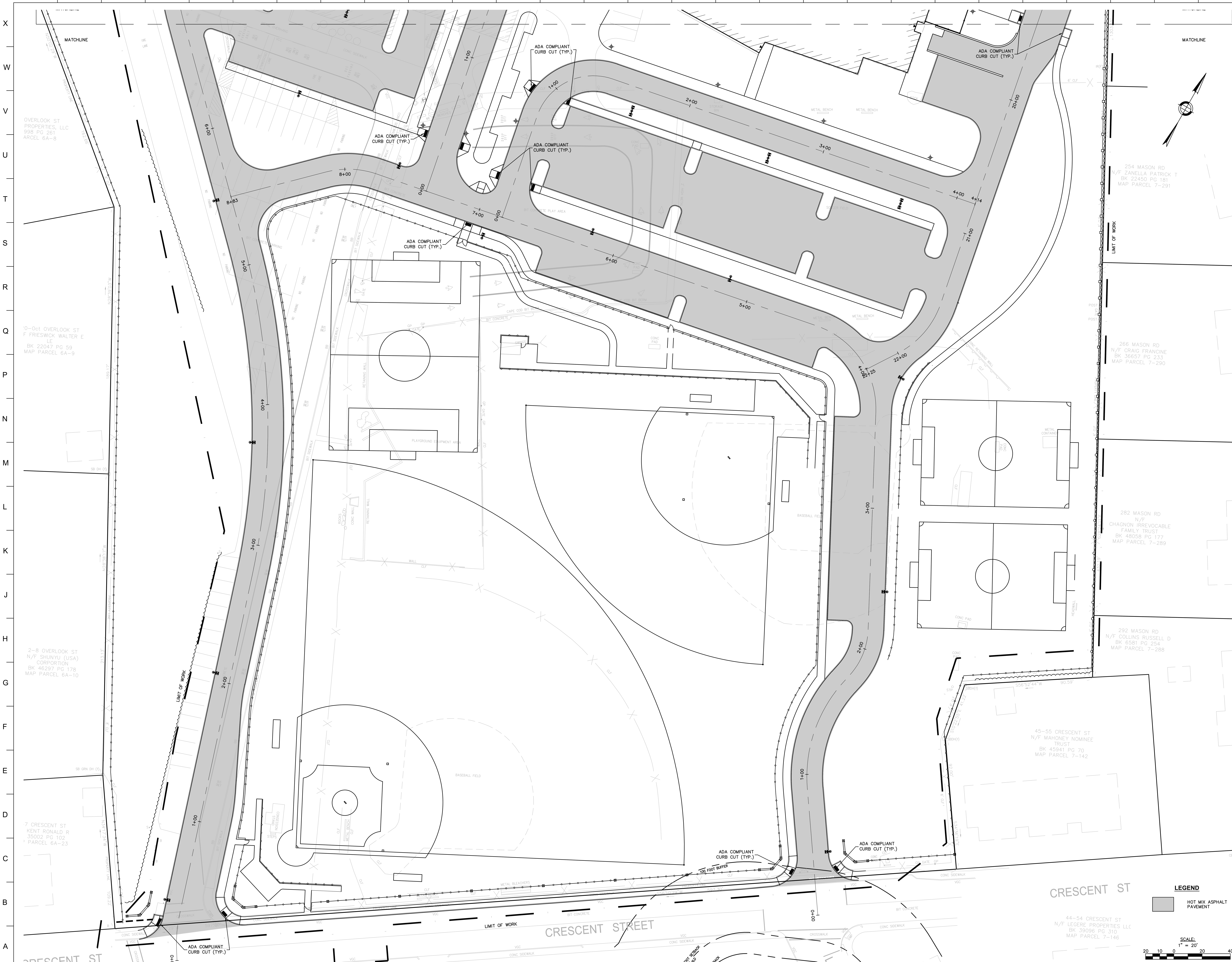
DATE: 04/09/2019
SCALE: 1"=40'

SHEET TITLE:
OVERALL ROADWAY LAYOUT PLAN

SHEET #:
C3.00

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Project No. 17-759

# W. EDWARD BALMER ELEMENTARY SCHOOL
21 CRESCENT STREET
WHITINSVILLE, MA 01588

COMMONWEALTH OF MASSACHUSETTS
SANDRA A. BROCK
CIVIL
No. 39417
REGISTERED PROFESSIONAL ENGINEER
4/3/2019



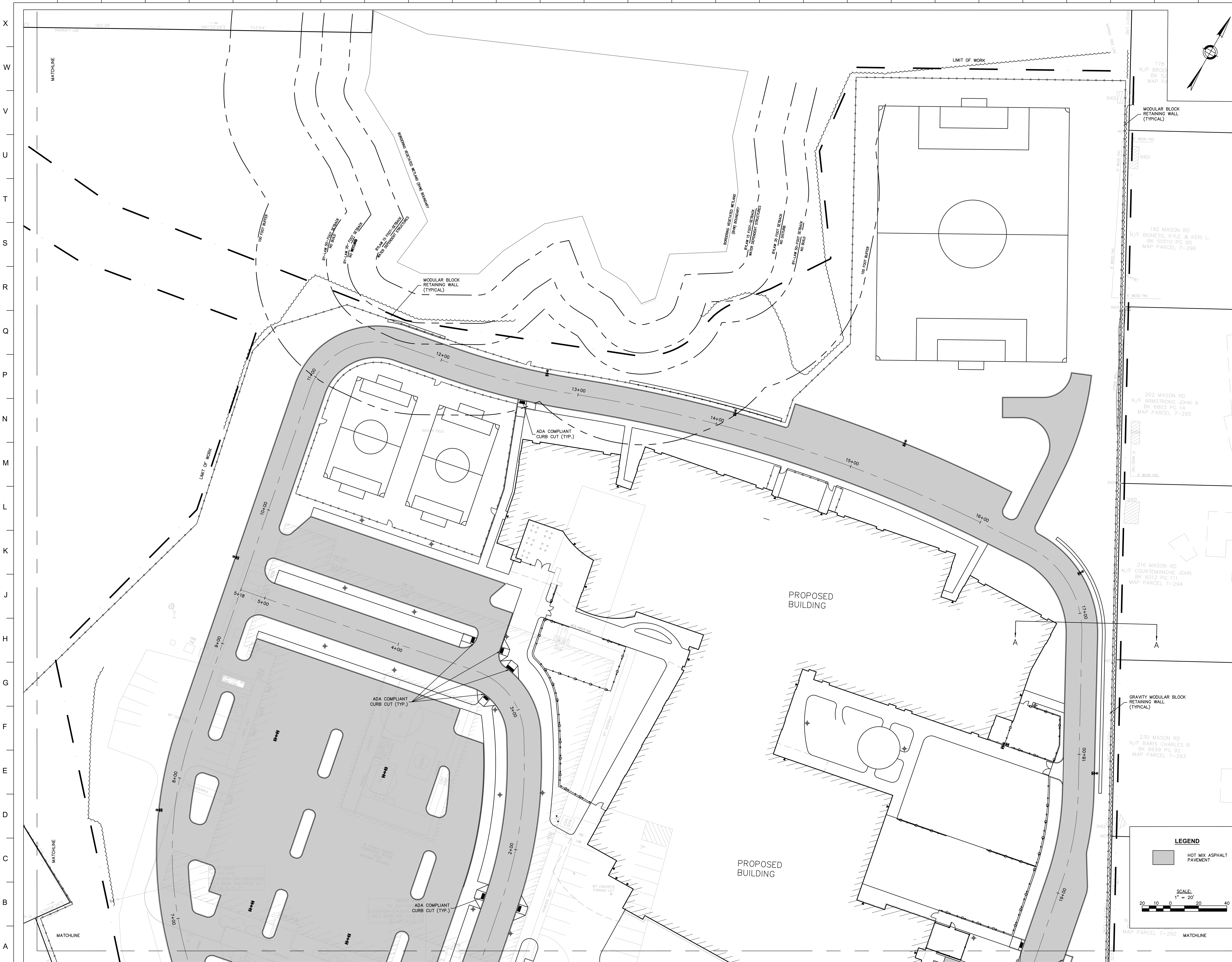
Planning Board Submission

| REVISION: | Date: |
|---|---|

DATE: 04/09/2019
SCALE: 1"=20'

SHEET TITLE:
ROADWAY LAYOUT PLAN SOUTH

SHEET #: C3.01

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COMMONWEALTH OF MASSACHUSETTS
SANDRA A. BROCK
CIVIL
No. 39417
REGISTERED PROFESSIONAL ENGINEER
4/3/2019
4.3.19



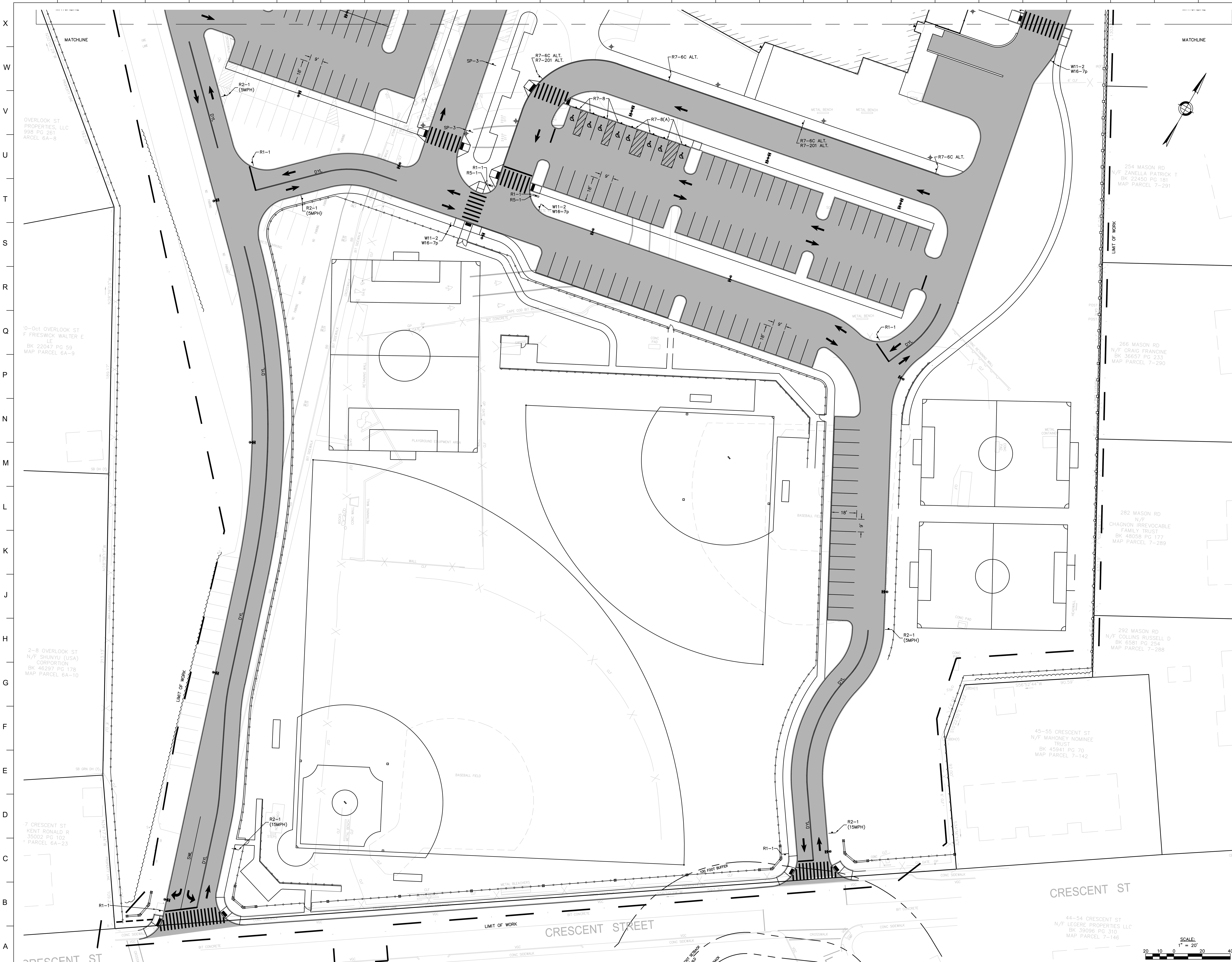
Planning Board Submission

| REVISION: | Date: |
|---|---|

DATE: 04/09/2019
SCALE: 1"=20'

SHEET TITLE:
ROADWAY LAYOUT PLAN NORTH

SHEET #:
C3.02

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NITSCH PROJECT #12260
COMMONWEALTH OF MASSACHUSETTS SANDRA A. BROCK CIVIL No. 39417 REGISTERED PROFESSIONAL ENGINEER
4/3/2019
4.3.19



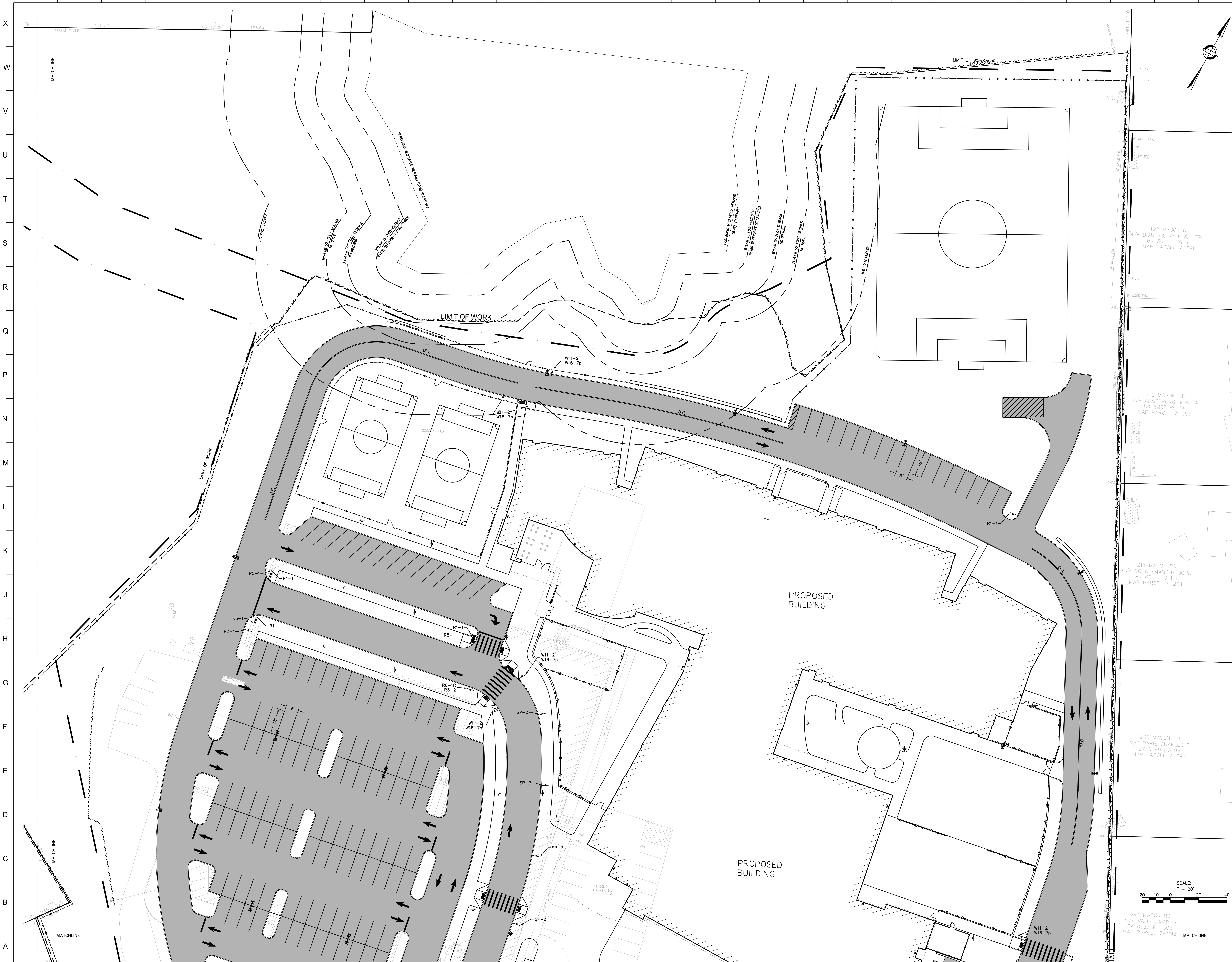
Planning Board Submission

| REVISION: | Date: |
|---|---|

DATE: 04/09/2019
SCALE: 1"=20'

SHEET TITLE:
ROADWAY SIGNAGE AND STRIPING PLAN SOUTH

SHEET #: C3.03





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No. 39417
REGISTERED PROFESSIONAL ENGINEER
4/3/2019

4.3.19



Planning Board Submission

| REVISION: | Date: |
|---|---|

DATE: 04/09/2019
SCALE: 1"=20'

SHEET TITLE:
ROADWAY SIGNAGE AND STRIPING PLAN NORTH

SHEET #: C3.04


BUILDING LAYOUT NOTES:

1. THE LOCATION OF THE CORNER AND OUTSIDE FACE OF THE PROPOSED BUILDING FOUNDATION WALL WAS TAKEN FROM AN AUTOCAD FILE RECEIVED FROM CLIENT ON DATE.XX/XX/XX.
2. ALL DIMENSIONS ARE PERPENDICULAR TO THE PROPERTY LINES.
3. THE BUILDING LOCATION INFORMATION SHOWN ON THIS PLAN PROVIDES THE POSITION AND ORIENTATION OF THE BUILDING. REFER TO THE ARCHITECTURAL AND STRUCTURAL DRAWINGS FOR BUILDING AND FOUNDATION DIMENSIONS, INCLUDING BUILDING OVERHANGS AND AREAWAYS. THE CONTRACTOR SHALL VERIFY BUILDING AND FOUNDATION DIMENSIONS WITH THE ARCHITECT AND STRUCTURAL ENGINEER PRIOR TO FOUNDATION CONSTRUCTION.

SCALE:
1" = 40'
40 20 0 40 80

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4/3/2019



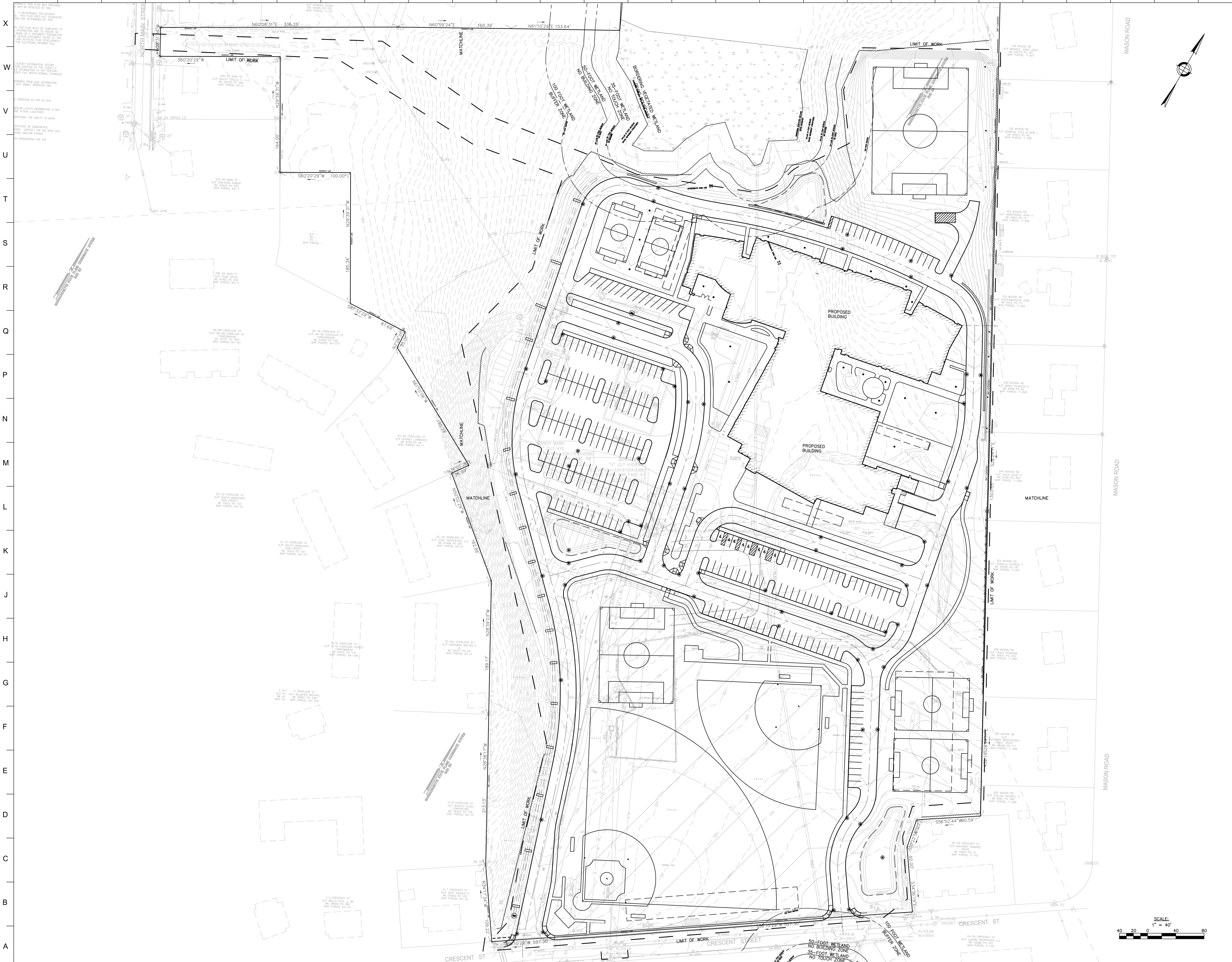
Planning Board Submission

| REVISION: | Date: |
|---|---|
| | |

DATE: 04/09/2019
SCALE: 1"=40'

SHEET TITLE:
BUILDING LOCATION PLAN

SHEET #:
C3.05

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4.3.19

4/3/2019



**Planning Board Submission**

| REVISION: | Date: |
|---|---|
| | |

DATE: **04/09/2019**

SCALE: **1"=40'-0"**

SHEET TITLE:
OVERALL SITE GRADING PLAN

SHEET #:
**C4.00**


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NITSCH PROJECT #12260
SANDRA A. BROCK CIVIL No. 39417

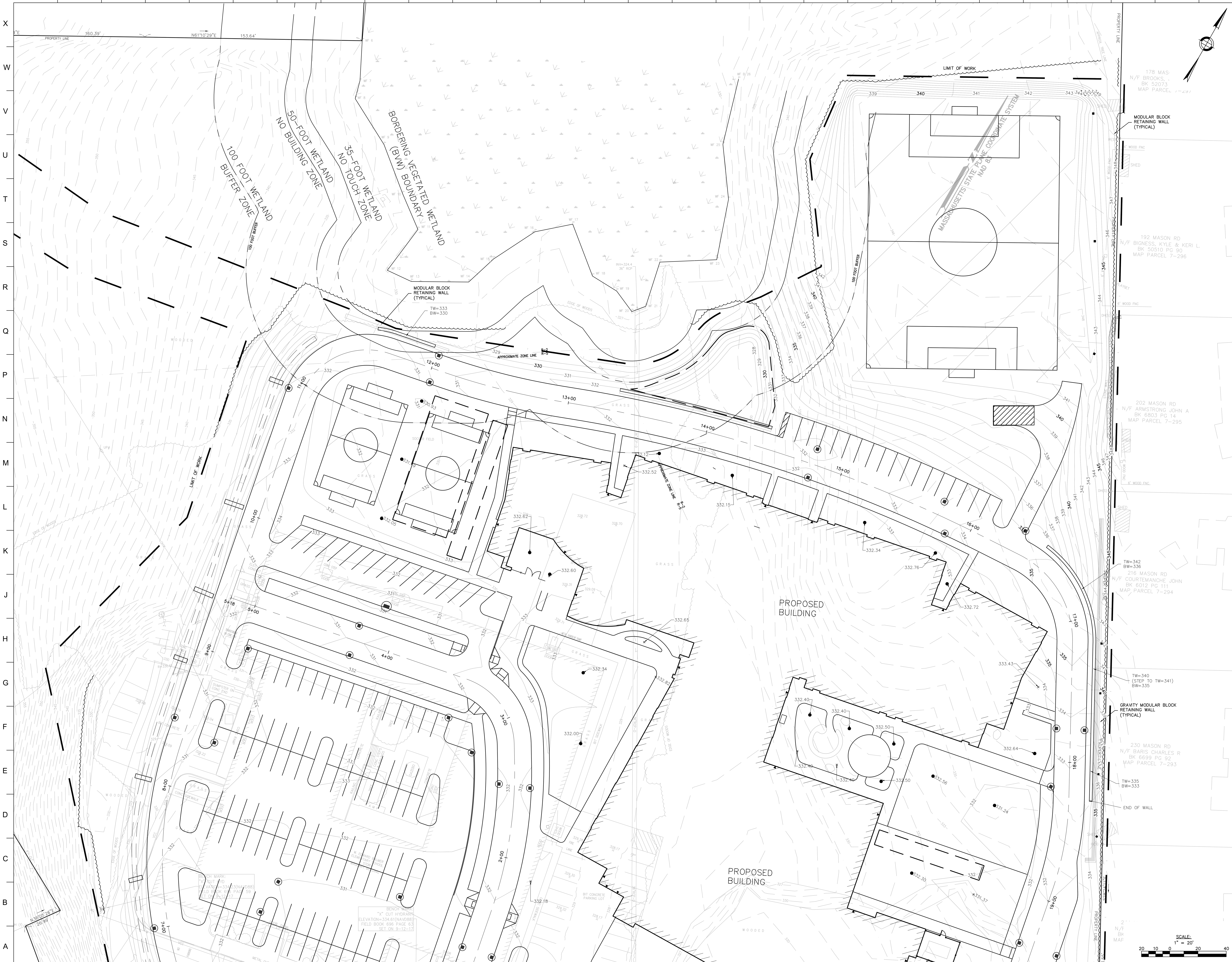
Planning Board Submission

| REVISION: | Date: |
|---|---|
| | |

DATE: 04/09/2019
SCALE: 1"=20'-0"

SHEET TITLE: SITE GRADING PLAN

SHEET #: C4.01

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REGISTERED PROFESSIONAL ENGINEER
4/3/2019
4.3.19



Planning Board Submission

| REVISION: | Date: |
| --- | --- |
| | |

DATE: 04/09/2019
SCALE: 1"=20'-0"

SHEET TITLE:
SITE GRADING PLAN

SHEET #
C4.02


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4/3/2019

4.3.19



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| REVISION: | Date: |
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| | |

DATE: 04/09/2019
SCALE: 1"=20'-0"

SHEET TITLE:
SITE GRADING PLAN

SHEET #:
**C4.03**


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4/3/2019
4.3.19



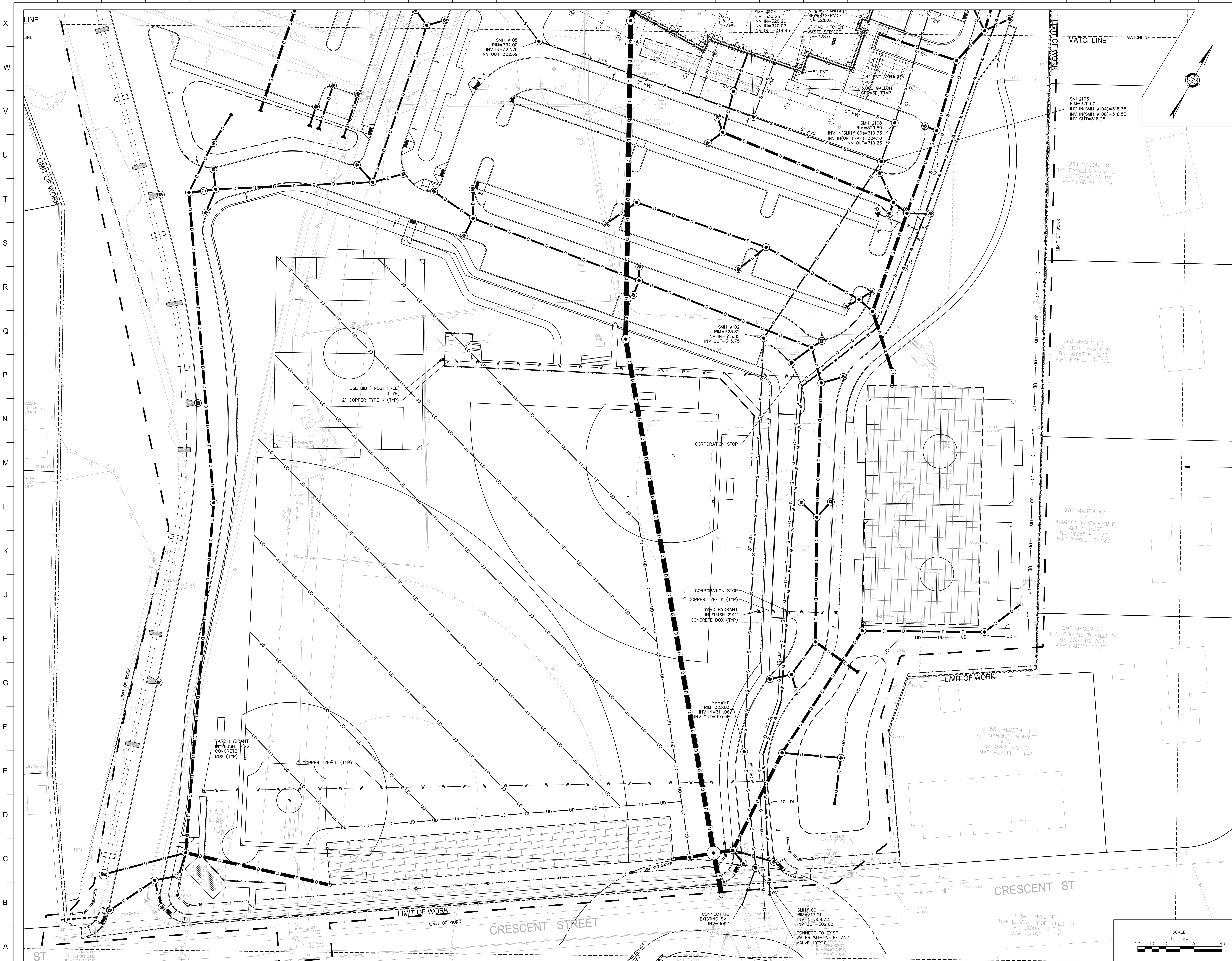
Planning Board Submission

| REVISION: | Date: |
|---|---|

DATE: 04/09/2019
SCALE: 1"=40'

SHEET TITLE:
OVERALL SITE UTILITY PLAN

SHEET #:
C5.00

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NITSCH PROJECT #12260
SANDRA A. BROCK CIVIL No. 39417
4/3/2019

Planning Board Submission

| REVISION: | Date: |
|---|---|
| | |

DATE: 04/09/2019
SCALE: 1"=20'

SHEET TITLE:
SITE UTILITY PLAN SOUTH

SHEET #:
C5.01


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4/3/2019
4.3.19



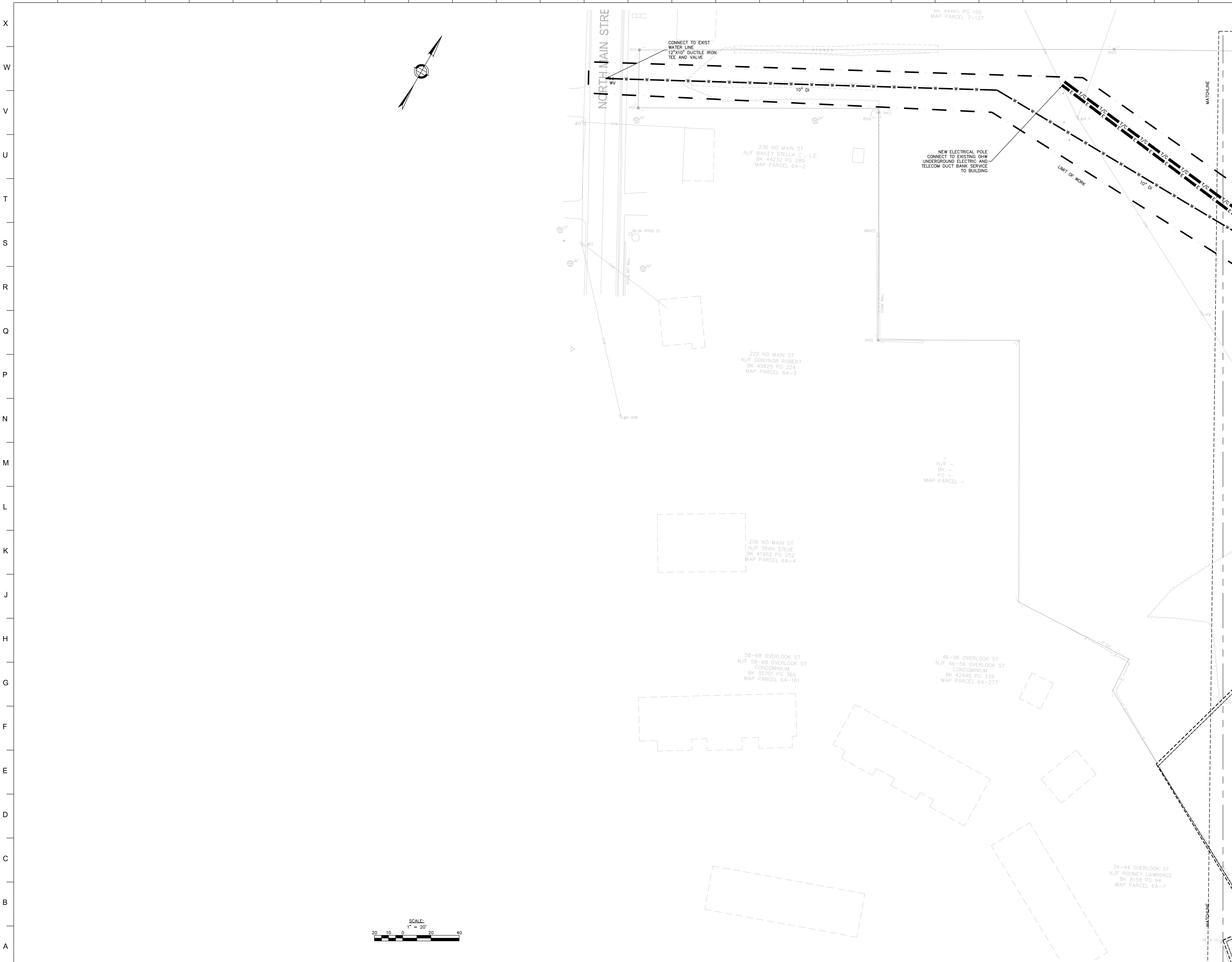
Planning Board Submission

| REVISION: | Date: |
| --- | --- |
| | |

DATE: 04/09/2019
SCALE: 1"=20'

SHEET TITLE:
SITE UTILITY PLAN NORTH

SHEET #: C5.02

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4/3/2019
4.3.19



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| REVISION: | Date: |
|---|---|
| | |

DATE: 04/09/2019
SCALE: 1"=20'

SHEET TITLE:
SITE UTILITY PLAN
NORTH MAIN ST

SHEET #:
**C5.03**


NOTE; ALL DRAIN PIPES ARE 12" CPP UNLESS OTHERWISE NOTED

SCALE:
1" = 20'
20 10 0 20 40

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No. 39417
4/3/2019



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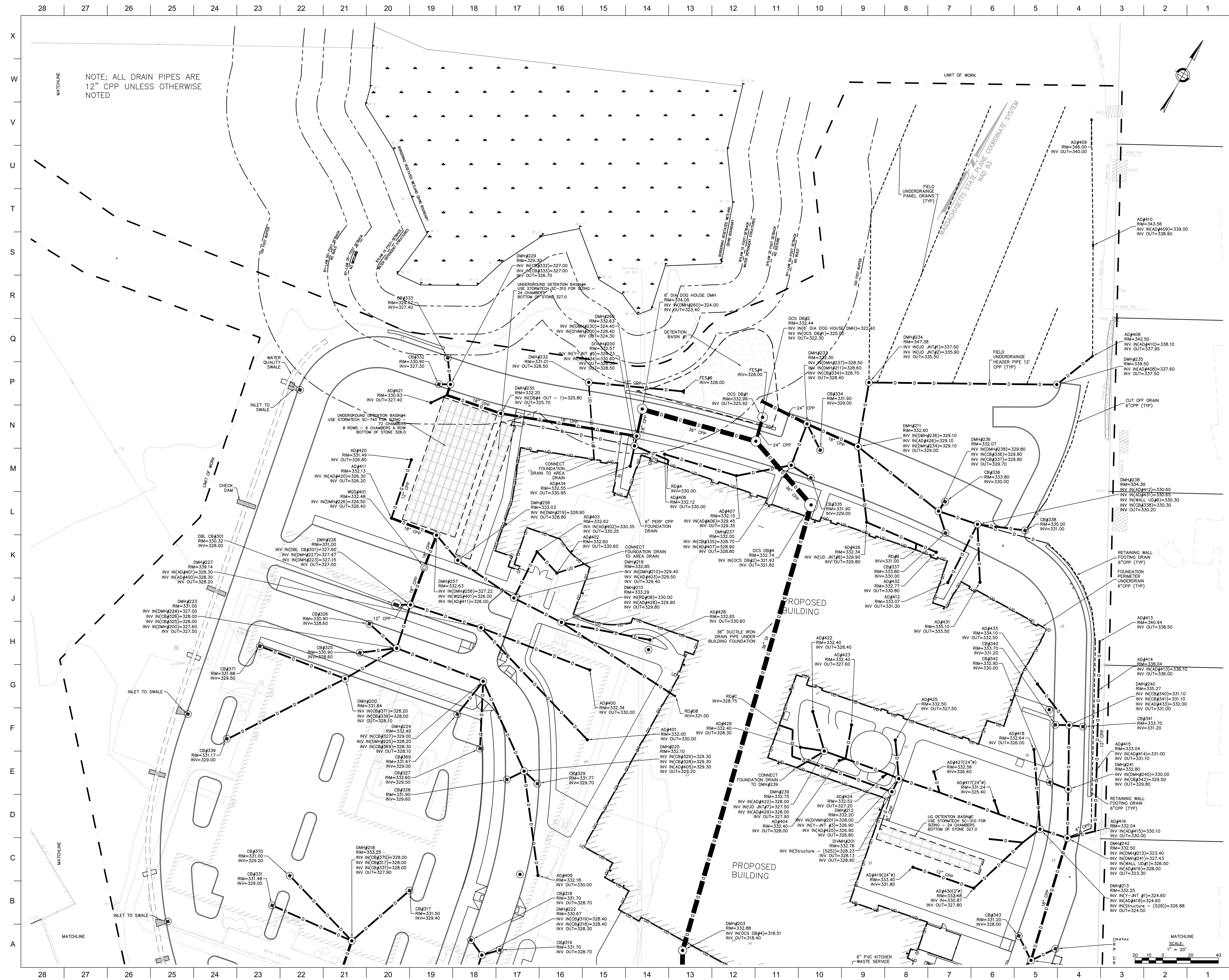
| REVISION: | Date: |
|---|---|

DATE: 04/09/2019
SCALE: 1"=20'

SHEET TITLE
SITE DRAINAGE PLAN SOUTH

SHEET #:
C5.04

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SANDRA A. BROCK CIVIL No. 39417
4/3/2019

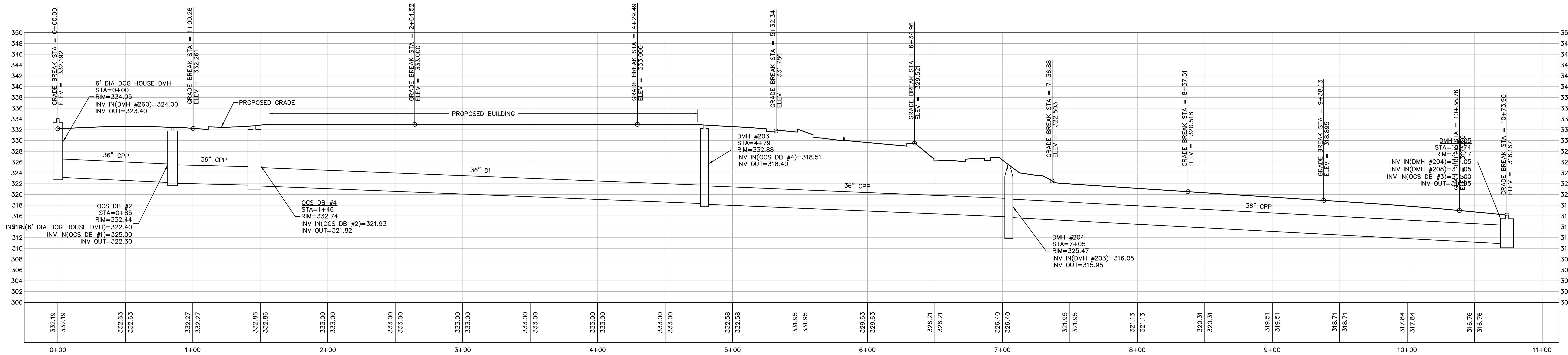
Planning Board Submission

| REVISION: | Date: |
|---|---|
| | |

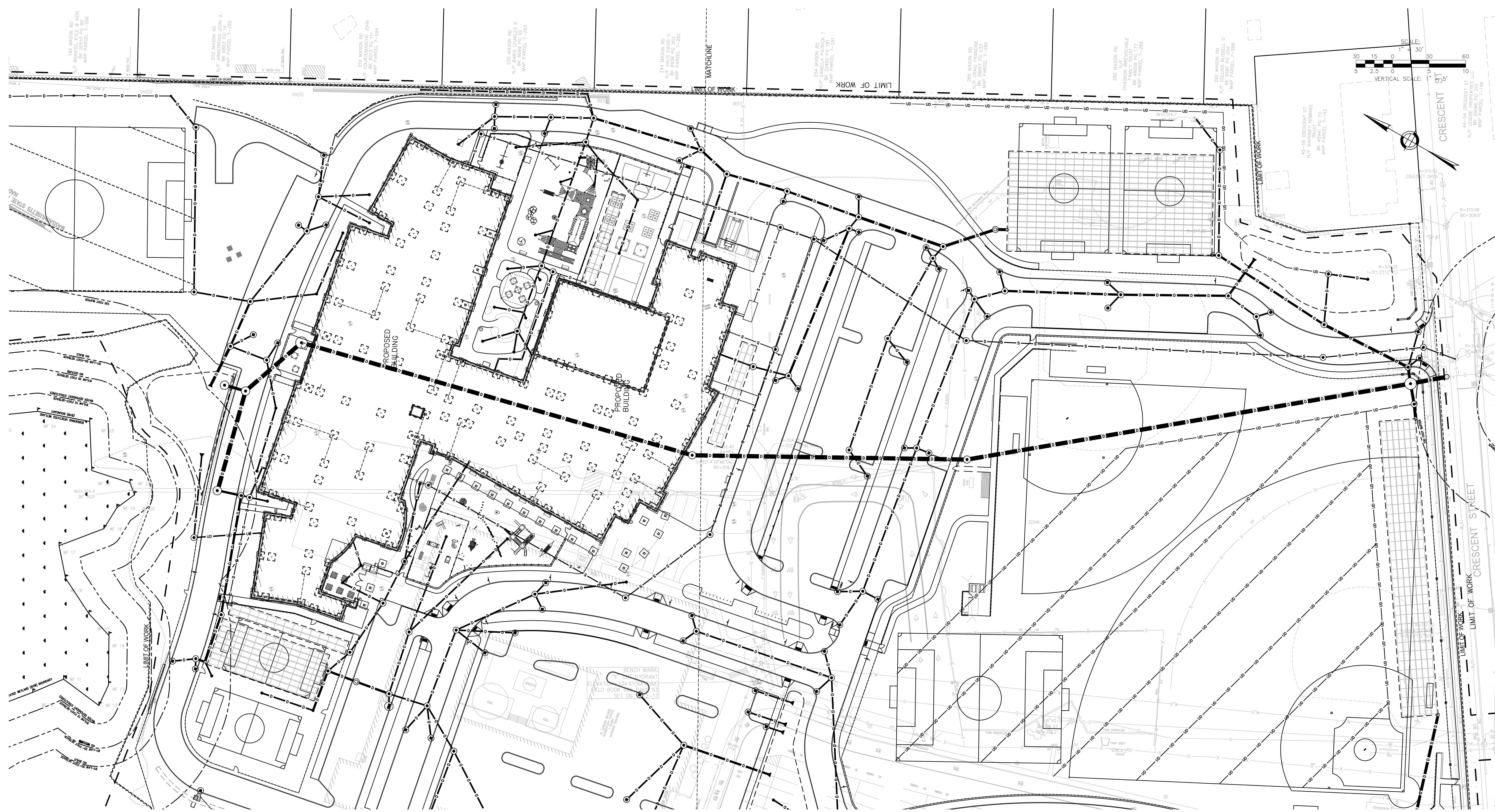
| DATE: | SCALE: |
|---|---|
| 04/09/2019 | 1"=20' |

SHEET TITLE:
SITE DRAINAGE PLAN NORTH

SHEET #: C5.05




36 IN DRAIN PIPE PROFILE

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CIVIL
No. 39417
4/3/2019



Planning Board Submission

| REVISION: | Date: |
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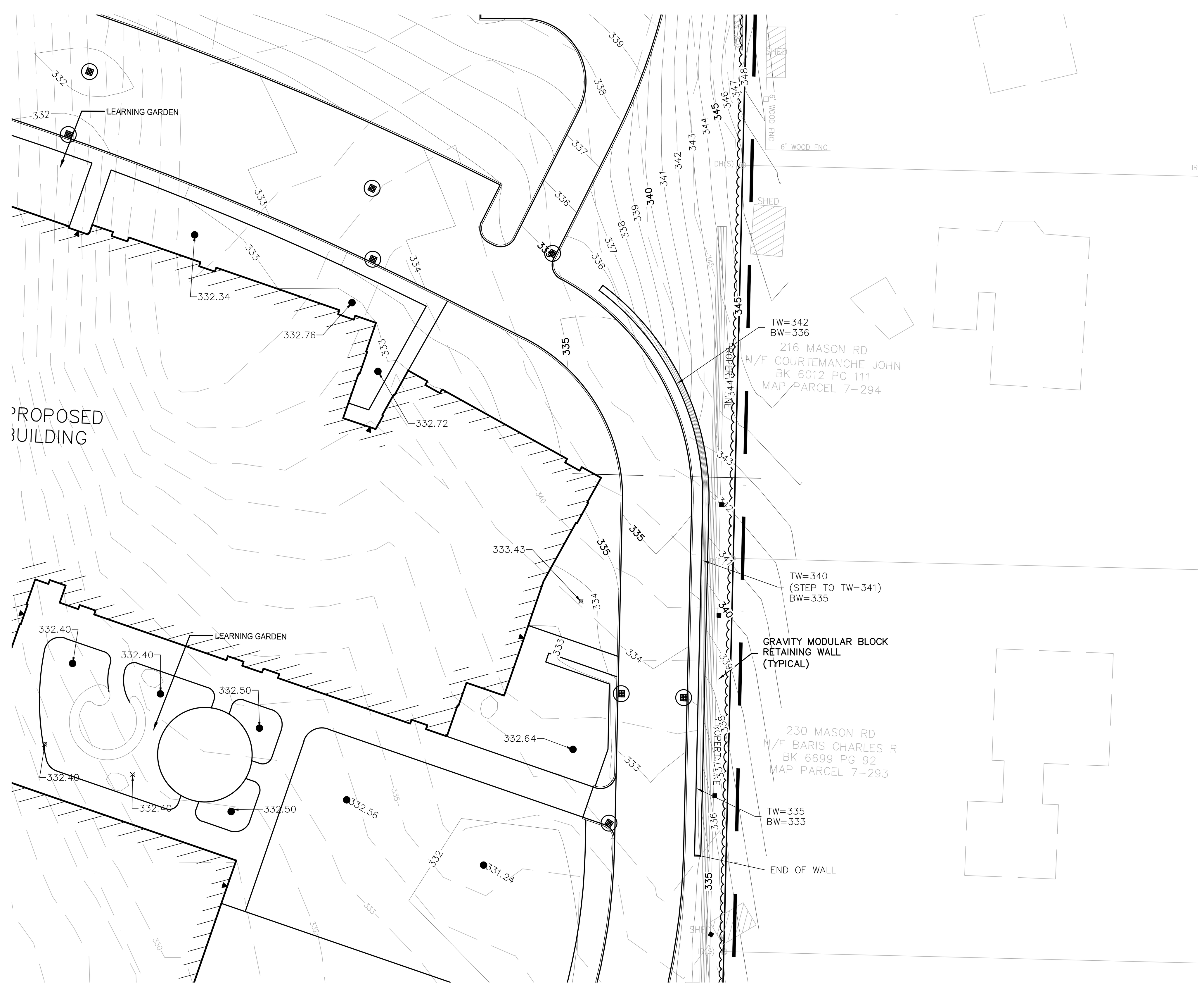
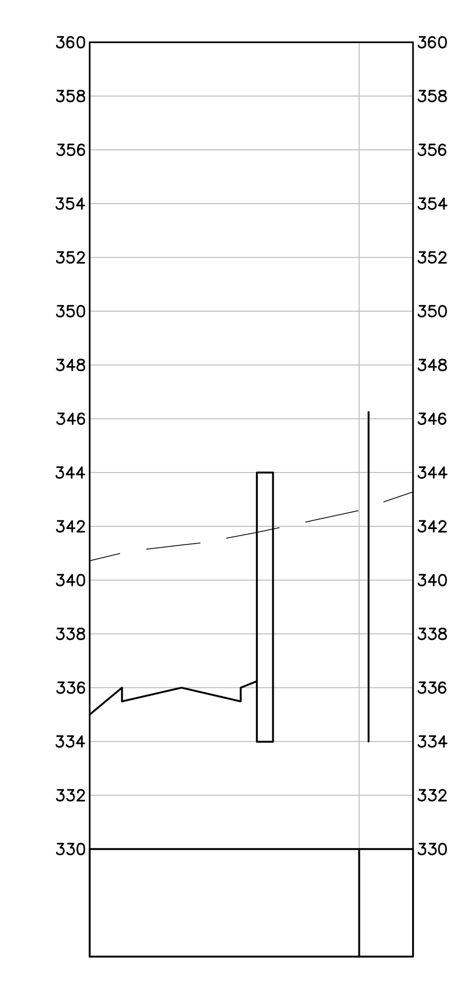
DATE: 04/09/2019
SCALE: 1"=40'

SHEET TITLE:
36" DRAIN PLAN AND PROFILE

SHEET #:
C5.06




SCALE:
1" = 20'



BUILDING - RETAINING WALL SECTION A-A

SCALE:
HORIZONTAL: 1" = 20'
VERTICAL: 1"=4'

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| REVISION: | Date: |
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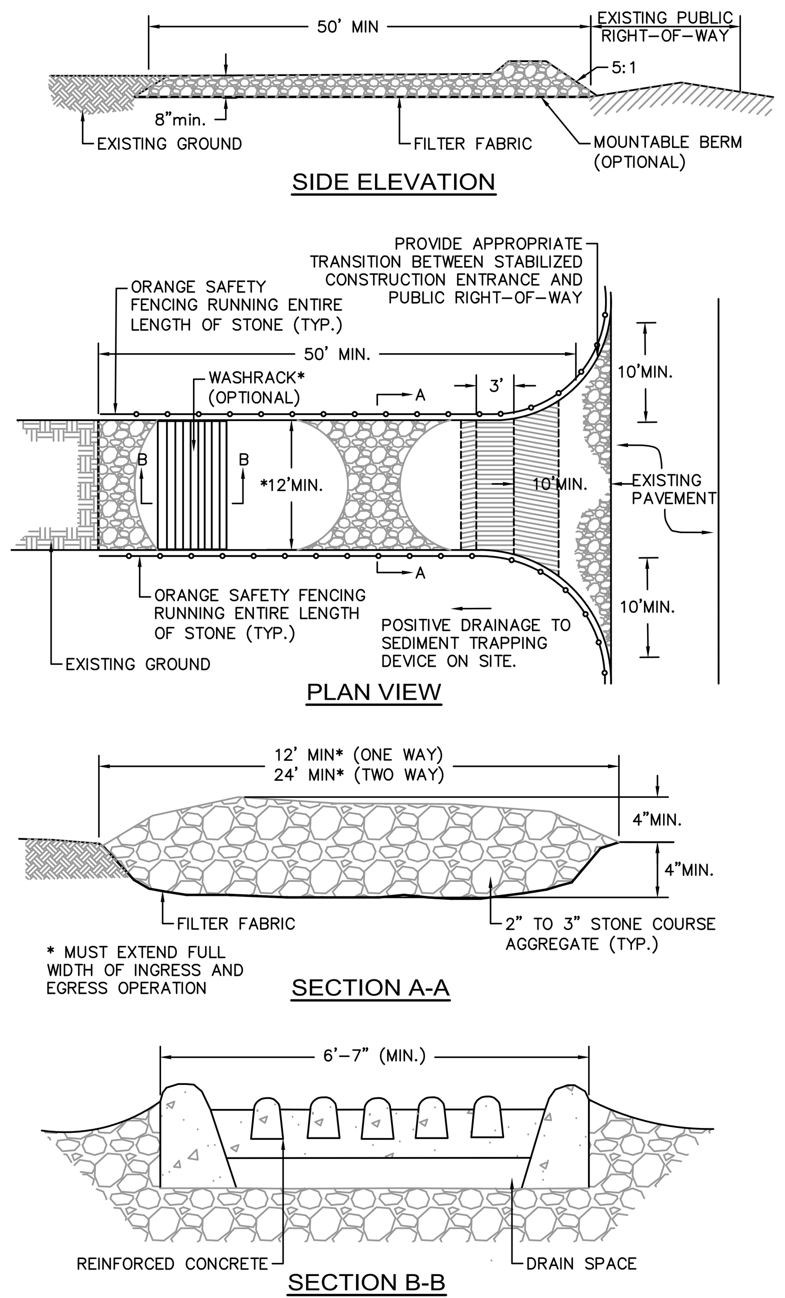
DATE: 04/09/2019
SCALE: 1"=20'-0"

SHEET TITLE:
RETAINING WALL SECTIONS

SHEET #:
C6.07




CONSTRUCTION SPECIFICATIONS

LENGTH – GREATER THAN OR EQUAL TO 50 FEET

WIDTH – TWELVE FOOT MINIMUM (ONE WAY), TWENTY FOUR FOOT MINIMUM (TWO WAY), BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS.

SURFACE WATER – ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM SHALL BE PERMITTED.

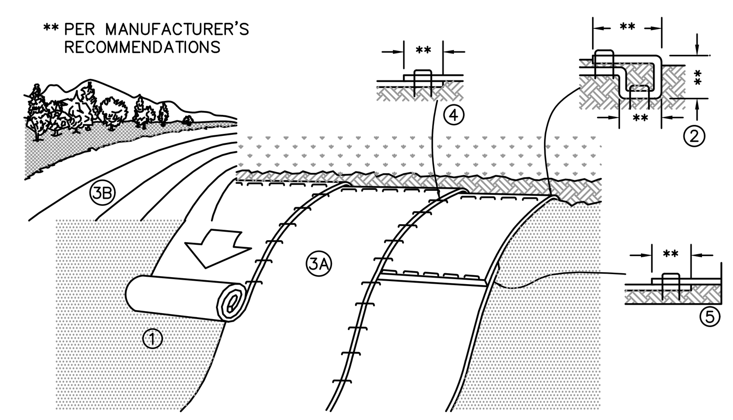
THICKNESS – 8"

MAINTENANCE – THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH SHALL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.

PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED.

## STABILIZED CONSTRUCTION ENTRANCE

NOT TO SCALE

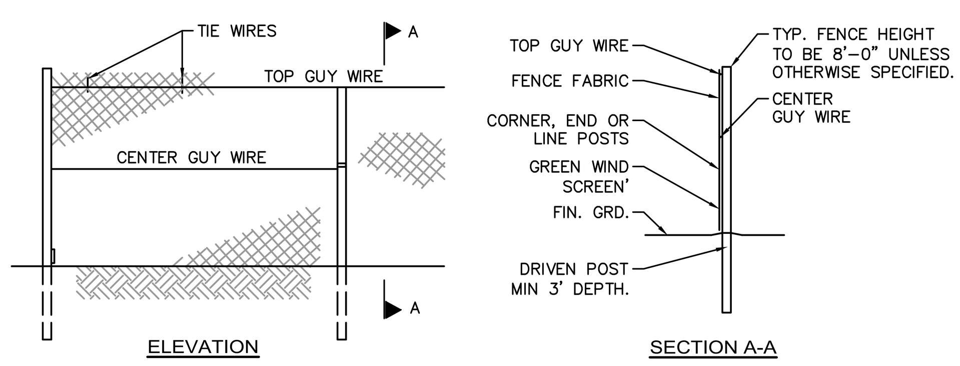



NOTES:

1. PREPARE SOIL BEFORE INSTALLING EROSION CONTROL BLANKETS (ECB's), INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED.
2. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE ECB's IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING PORTION OF ECB's BACK OVER SEED AND COMPACTED SOIL. SECURE ECB's OVER COMPACTED SOIL WITH A ROW OF STAKES/STAPLES SPACED ACCORDANCE TO THE MANUFACTURER'S RECOMMENDATIONS ACROSS THE WIDTH OF THE ECB's.
3. ROLL THE ECB's DOWN (A) OR HORIZONTALLY (B) ACROSS THE SLOPE. ECB's WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL ECB's MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAKES/STAPLES IN APPROPRIATE LOCATIONS AS SHOWN ON THE STAKE/STAPLE PATTERN GUIDE.
4. THE EDGES OF PARALLEL ECB's MUST BE STAKED/STAPLED WITH OVERLAP DEPENDING ON ECB's TYPE. SEE THE MANUFACTURER'S RECOMMENDATIONS.
5. CONSECUTIVE ECB's SPLICED DOWN THE SLOPE MUST BE PLACED END OVER END (SHINGLE STYLE) WITH AN OVERLAP (SEE THE MANUFACTURER'S RECOMMENDATIONS). STAKE/STAPLE THROUGH OVERLAPPED AREA, ACROSS ENTIRE ECB's WIDTH PER MANUFACTURER'S RECOMMENDATIONS.
6. IN LOOSE SOIL CONDITIONS, THE USE OF STAKE OR STAPLE LENGTHS GREATER THAN 6" MAY BE NECESSARY TO PROPERLY SECURE THE ECB's.
7. THE CONTRACTOR SHALL FOLLOW ALL INSTALLATION INSTRUCTIONS AS RECOMMENDED BY THE MANUFACTURER.

## TEMPORARY EROSION CONTROL BLANKET FOR STEEP SLOPES DETAIL

NOT TO SCALE

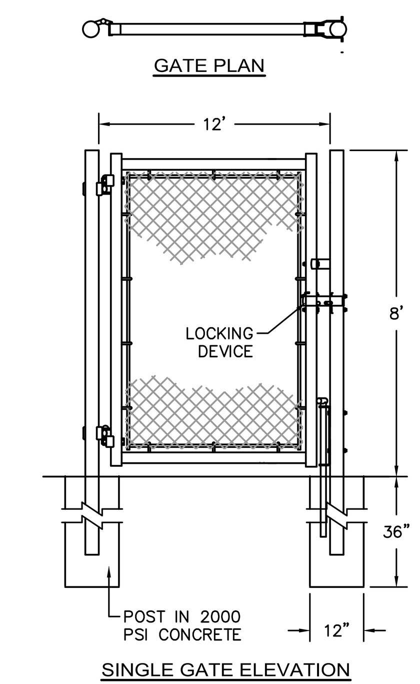



CONSTRUCTION FENCE AND GATE NOTES

1. FABRIC SHALL BE 0.148" WIRE, WOVEN INTO APPROXIMATELY 2" DIAMOND MESH.
2. THE FENCE FABRIC SHALL BE ZINC COATED STEEL OR ALUMINUM COATED STEEL.
3. FENCE POSTS SHALL RECEIVE THE SAME COATING AND TREATMENT AS THE FENCE FABRIC (DESCRIBED ABOVE).
4. THE CONTRACTOR SHALL ADD A GREEN WIND SCREEN
5. LINE POSTS SHALL BE 2½" O.D. END OR CORNER POSTS SHALL BE 3" O.D.
6. THE CONTRACTOR IS RESPONSIBLE FOR SURFACE RESTORATION ONCE THE FENCE IS REMOVED.
7. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF THE TEMPORARY CONSTRUCTION FENCE AT THE CONCLUSION OF THE PROJECT.

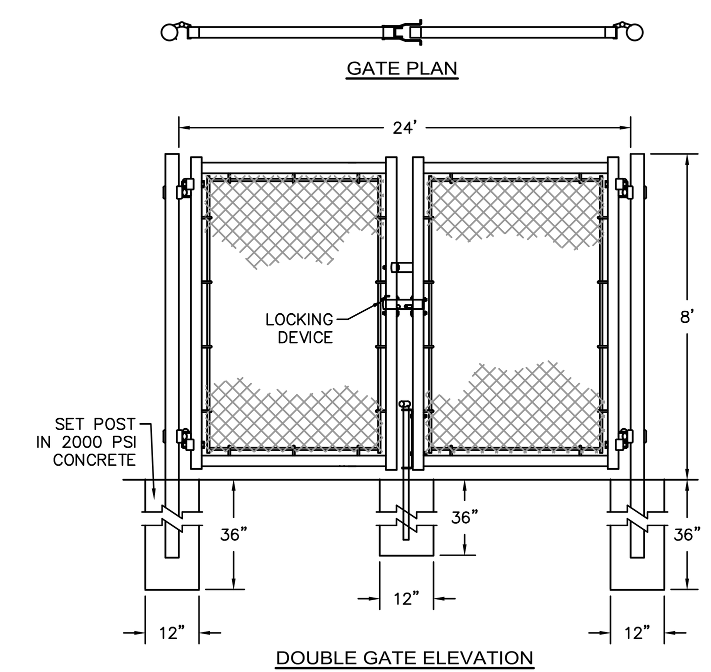
## CHAIN LINK CONSTRUCTION FENCE

NOT TO SCALE



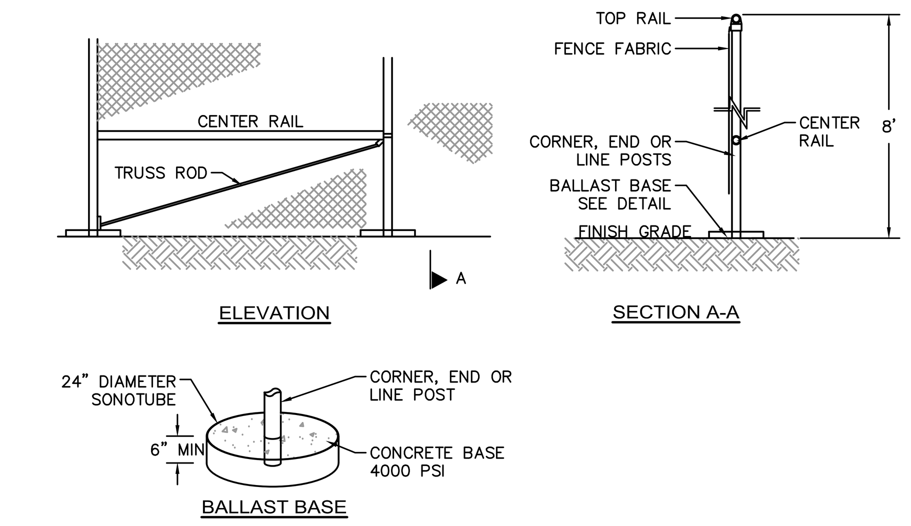

## 12' WIDE EMERGENCY GATE

NOT TO SCALE




## 24' WIDE DOUBLE GATE

NOT TO SCALE

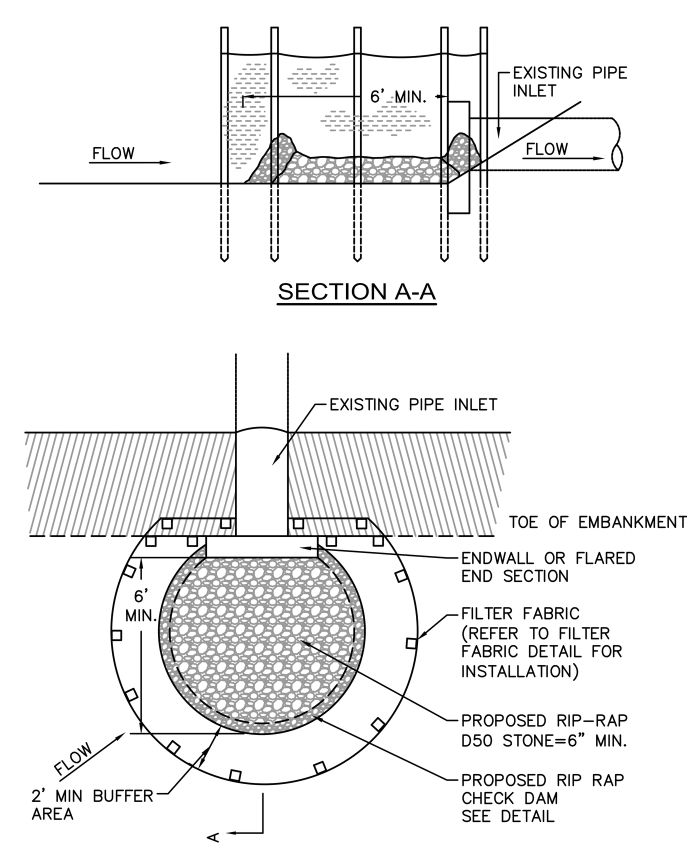



NOTES

1. END, GATE AND CORNER POSTS SHALL BE BRACED TO ADJACENT LINE POSTS. (MORE THAN 30° CHANGE IN DIRECTION CONSTITUTES A CORNER)
2. FABRIC SHALL BE 0.148" GAUGE MIN. WIRE, WOVEN INTO APPROXIMATELY 2" DIAMOND MESH.
3. ZINC-COATED STEEL FABRIC BASE METAL SHALL BE COATED WITH PRIME WESTERN SPELTER OR EQUAL.
4. ALUMINUM COATED STEEL FABRIC BASE METAL SHALL BE COATED WITH ALUMINUM ALLOY.
5. LINE POSTS SHALL BE 2½" O.D. END OR CORNER POSTS SHALL BE 3" O.D.
6. THE CONTRACTOR IS RESPONSIBLE FOR SURFACE RESTORATION ONCE THE FENCE IS REMOVED.
7. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF THE TEMPORARY CONSTRUCTION FENCE AT THE CONCLUSION OF THE PROJECT.

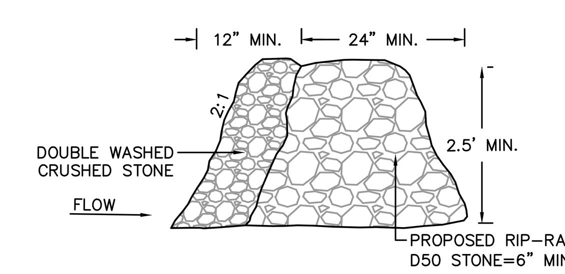
## TEMPORARY CHAIN LINK CONSTRUCTION FENCE WITH BALLAST BASE

NOT TO SCALE



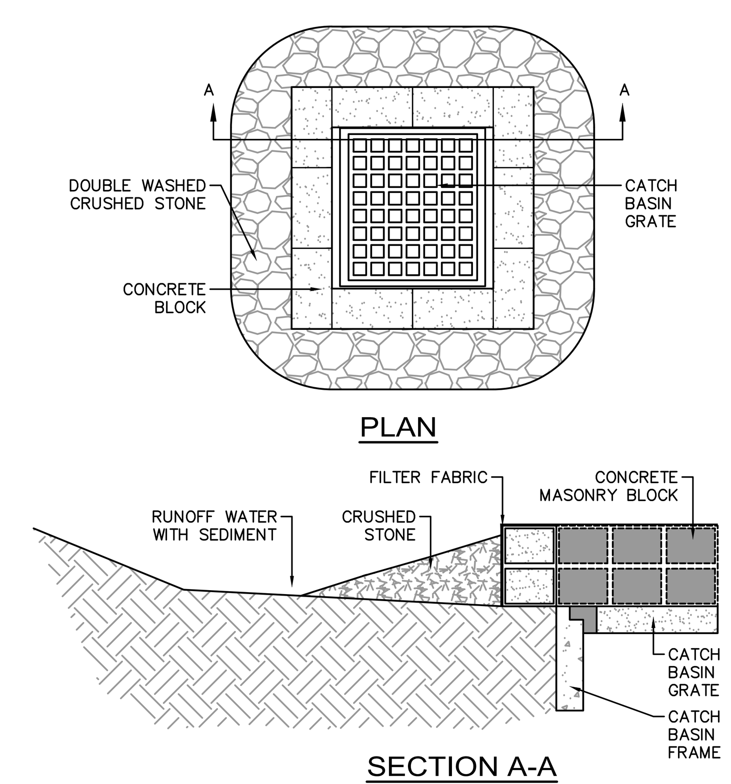

## CULVERT INLET PROTECTION WITH SILT FENCE

NOT TO SCALE




## RIP-RAP CHECK DAM DETAIL

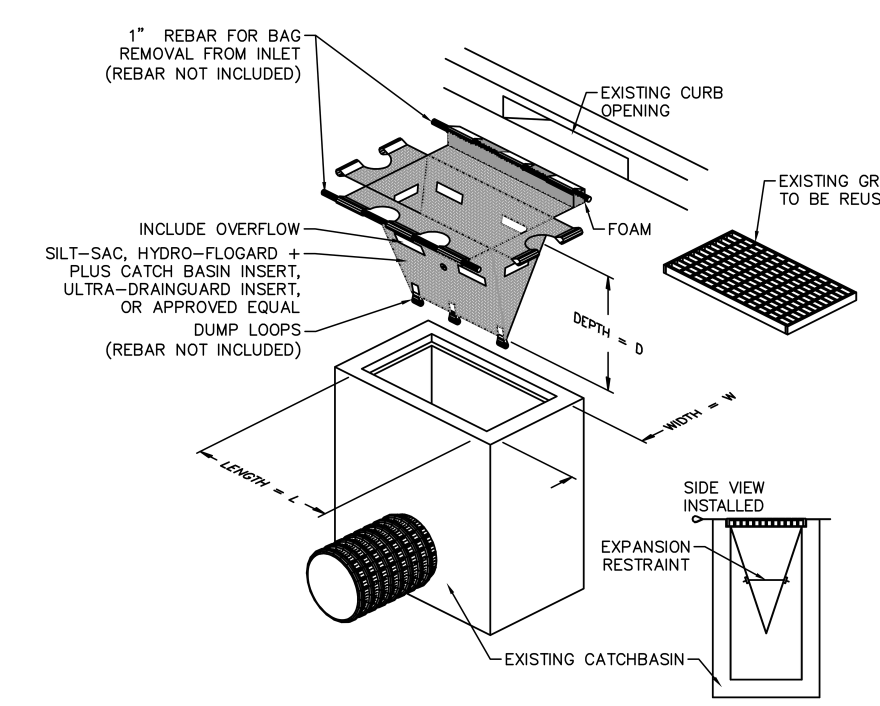
NOT TO SCALE




THIS METHOD OF INLET PROTECTION IS APPLICABLE WHERE HEAVY FLOWS ARE EXPECTED AND WHERE AN OVERFLOW CAPACITY IS NECESSARY TO PREVENT EXCESSIVE PONDING AROUND STRUCTURE.

## INLET PROTECTION - OPTION 3 CATCH BASIN W/ BLOCK AND GRAVEL

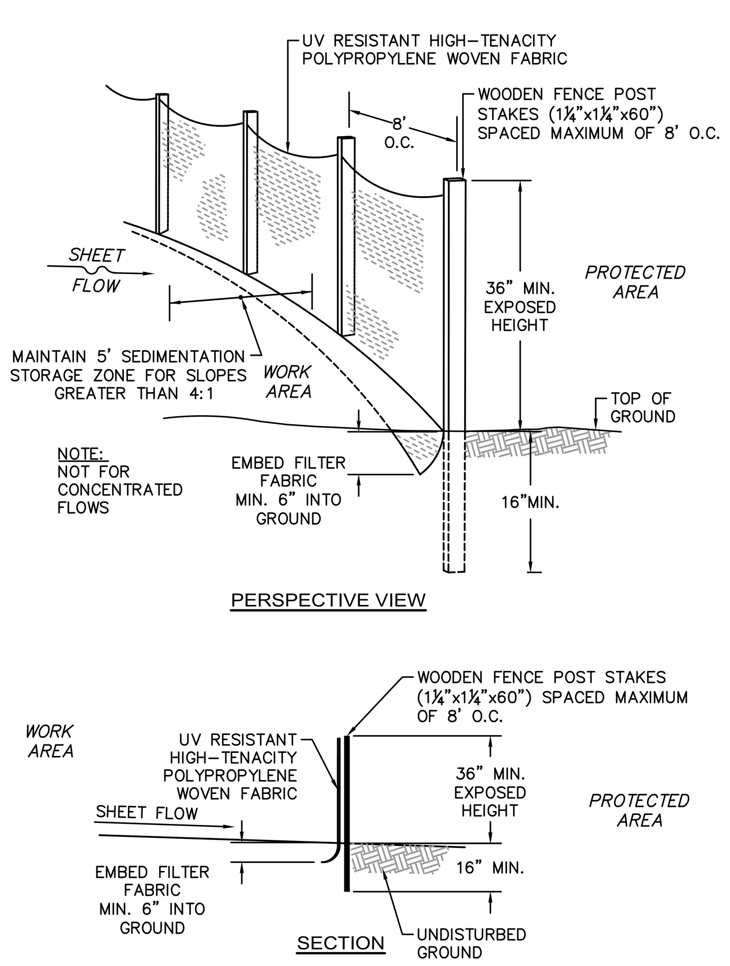
NOT TO SCALE




THIS METHOD OF INLET PROTECTION IS APPLICABLE WHERE THE INLET DRAINS SHEET, OVERLAND OR CONCENTRATED FLOWS (NOT GREATER THAN 1 CFS). THE METHOD CAN DRAIN FLAT AREA TO STEEP SLOPES. INLET CAPACITY WILL BE DECREASED WITH THIS METHOD AND THE CONTRACTOR SHALL EXPECT PONDING DURING HIGH FLOW EVENTS.

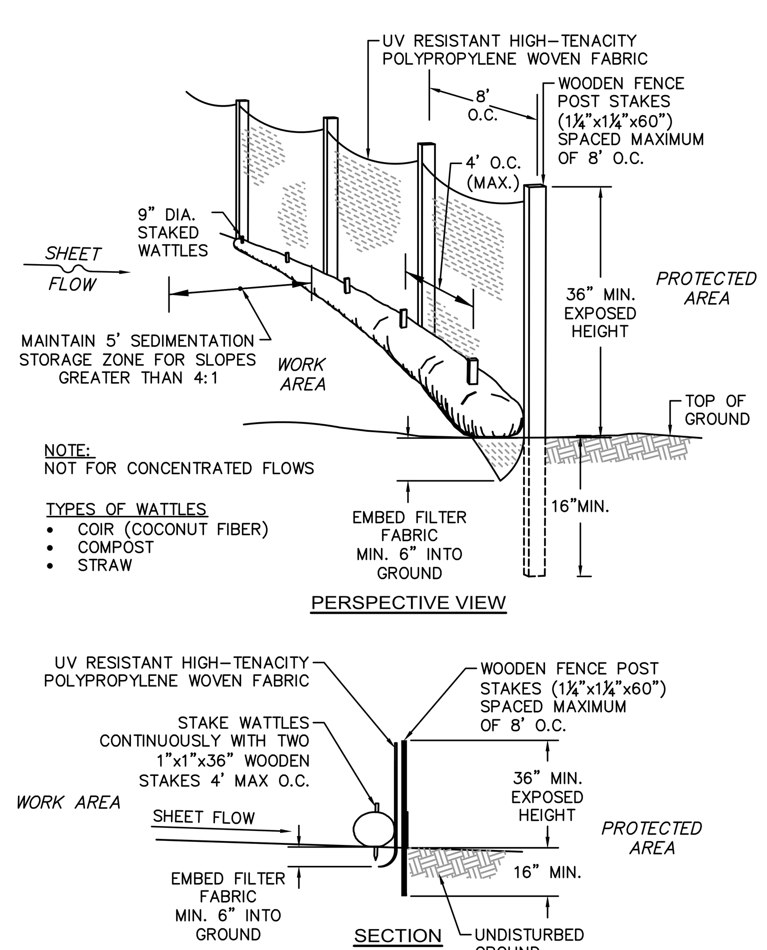
## INLET PROTECTION - OPTION 1 CATCH BASIN WITH SILTATION SACK

NOT TO SCALE



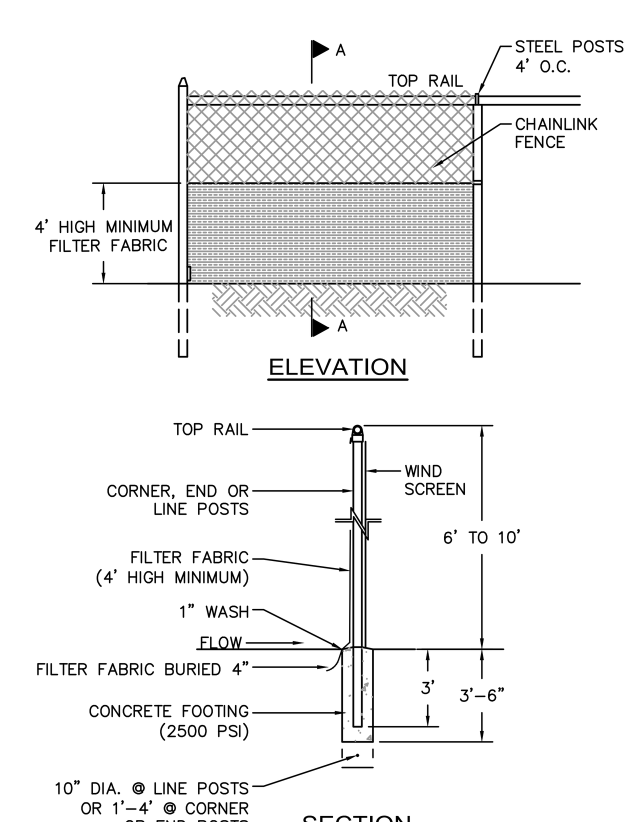

## PERIMETER EROSION CONTROL BARRIER OPTION A - SILT FENCE DETAIL

NOT TO SCALE




## PERIMETER EROSION CONTROL BARRIER OPTION B - SILT FENCE DETAIL WITH WATTLES

NOT TO SCALE




NOTES:

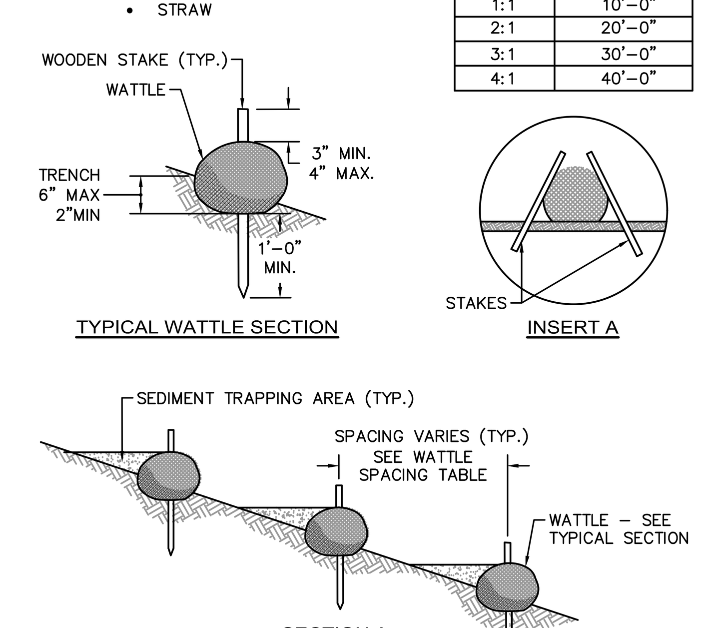
1. CHAINLINK FENCE SHALL BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES.
2. FILTER FABRIC SHALL BE FASTENED SECURELY TO CHAINLINK FENCE WITH TIES SPACED HORIZONTALLY 24" AS THE TOP AND MIDSECTION.
3. WHEN TWO SECTIONS OF FILTER FABIRC ADJOIN EACH OTHER, THEY SHALL BE OVERLAPPED BY 6"
4. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL SHALL BE REMOVED WHEN SEDIMENT BUILD-UP REACHES 50% OF THE HEIGHT OF THE FILTER FABRIC.
5. MAINTENANCE OF SILT FENCE SHALL BE RECORDED TO IN THE SWPPP

## PERIMETER EROSION CONTROL BARRIER OPTION C - SUPER SILT FENCE

NOT TO SCALE

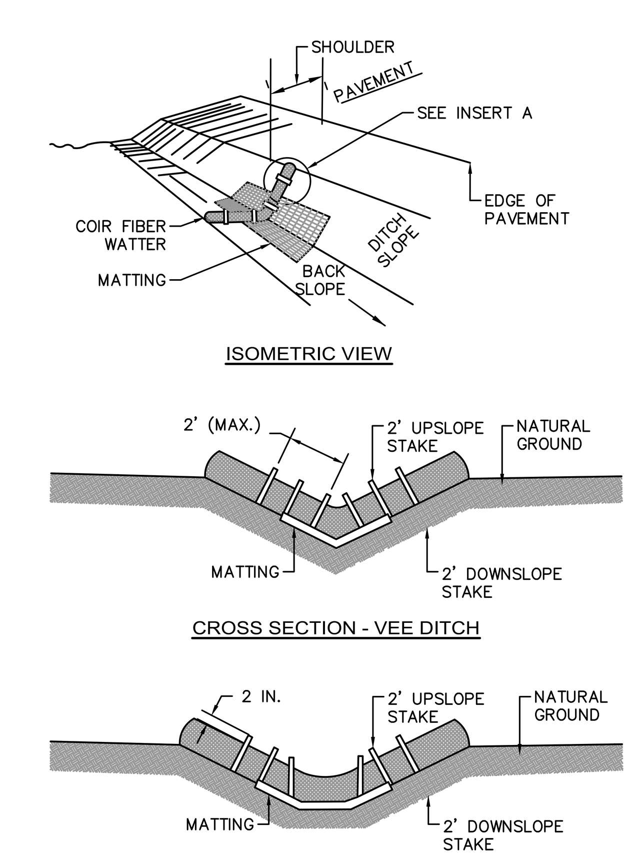
TYPES OF WATTLES
- COIR (COCONUT FIBER)
- COMPOST
- STRAW

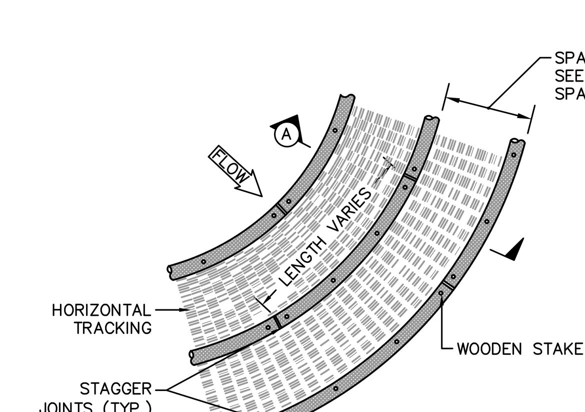
| WATTLE SPACING TABLE | |
|---|---|
| SLOPE | MAX. SPACING |
| 1:1 | 10'-0" |
| 2:1 | 20'-0" |
| 3:1 | 30'-0" |
| 4:1 | 40'-0" |




WATTLE SLOPE PROTECTION NOTES:

1. SECURELY KNOT EACH END OF WATTLE. ABUT ADJACENT WATTLES TIGHTLY, END TO END, WITHOUT OVERLAPPING THE ENDS.
2. PILOT HOLES MAY BE DRIVEN THROUGH THE WATTLES AND INTO THE SOIL WHEN SOIL CONDITIONS REQUIRE
3. WATTLES SHALL BE INSPECTED REGULARLY, AND IMMEDIATELY AFTER A RAINFALL PRODUCES RUNOFF, TO ENSURE THEY REMAIN THOROUGHLY ENTRENCHED AND IN CONTACT WITH THE SOIL.
4. ONLY INSTALL WATTLE(S) TO A HEIGHT IN DITCH SO FLOW WILL NOT WASH AROUND WATTLE AND SCOUR DITCH SLOPES AND AS DIRECTED.

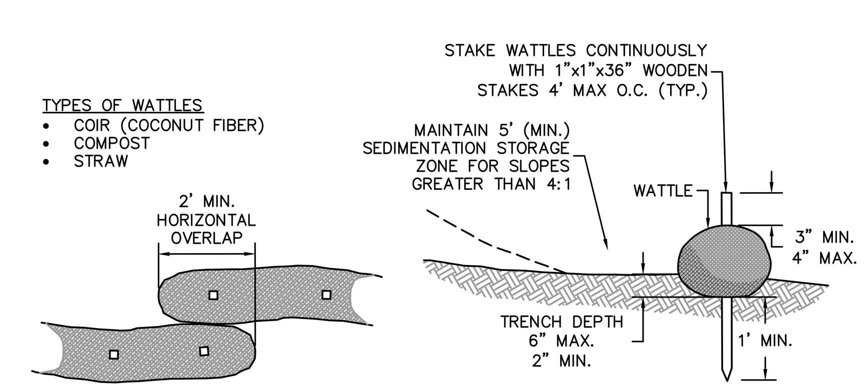



## PERIMETER EROSION CONTROL BARRIER OPTION E - WATTLES FOR STEEP SLOPES

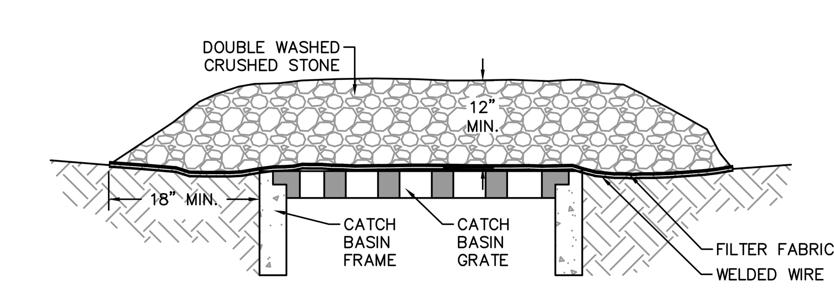
NOT TO SCALE

TYPES OF WATTLES
- COIR (COCONUT FIBER)
- COMPOST
- STRAW




## PERIMETER EROSION CONTROL BARRIER OPTION D - WATTLES FOR SLOPES LESS THAN 10:1

NOT TO SCALE




THIS METHOD OF INLET PROTECTION IS APPLICABLE WHERE HEAVY FLOWS ARE EXPECTED, BUT NOT WHERE PONDING AROUND THE STRUCTURE MIGHT CAUSE EXCESSIVE INCONVENIENCE OR DAMAGE TO ADJACENT STRUCTURES AND UNPROTECTED AREAS. THIS METHOD NOT ACCEPTABLE IN ACTIVE TRAFFIC AREAS.

## INLET PROTECTION - OPTION 2 CATCH BASIN WITH GRAVEL

NOT TO SCALE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Project No. 17-759

# W. EDWARD BALMER ELEMENTARY SCHOOL

21 CRESCENT STREET
WHITINSVILLE, MA 01588

NITSCH PROJECT #12260

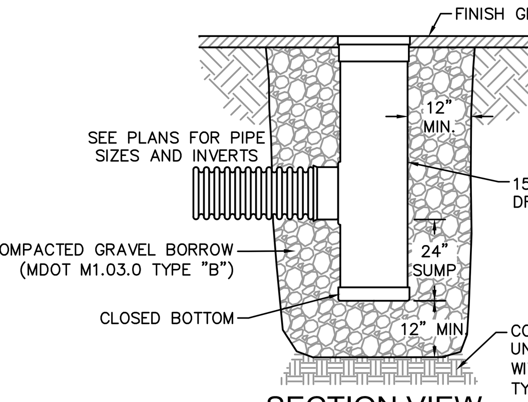
Planning Board Submission

| REVISION: | Date: |
|---|---|

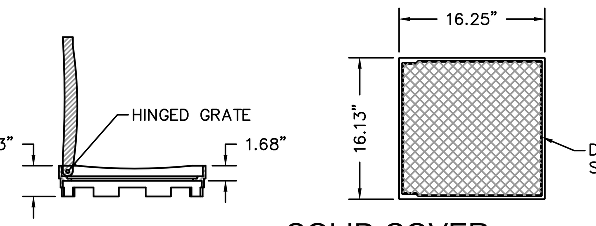
DATE: 04/09/2019
SCALE: As indicated

SHEET TITLE: SITE PREPARATION DETAILS

SHEET #: C7.00



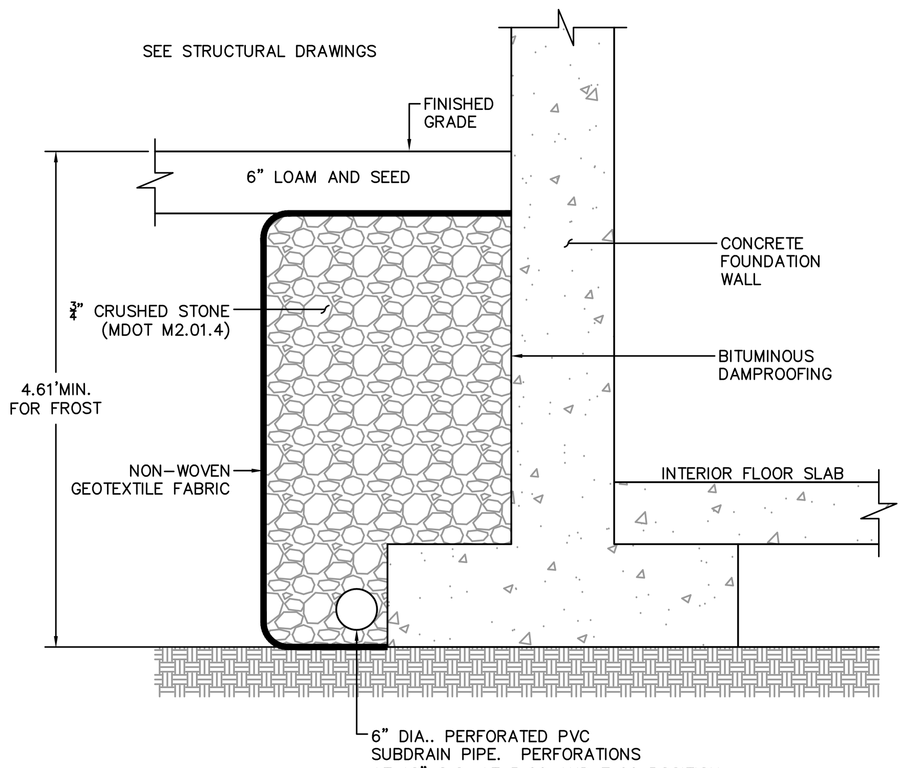

SECTION VIEW



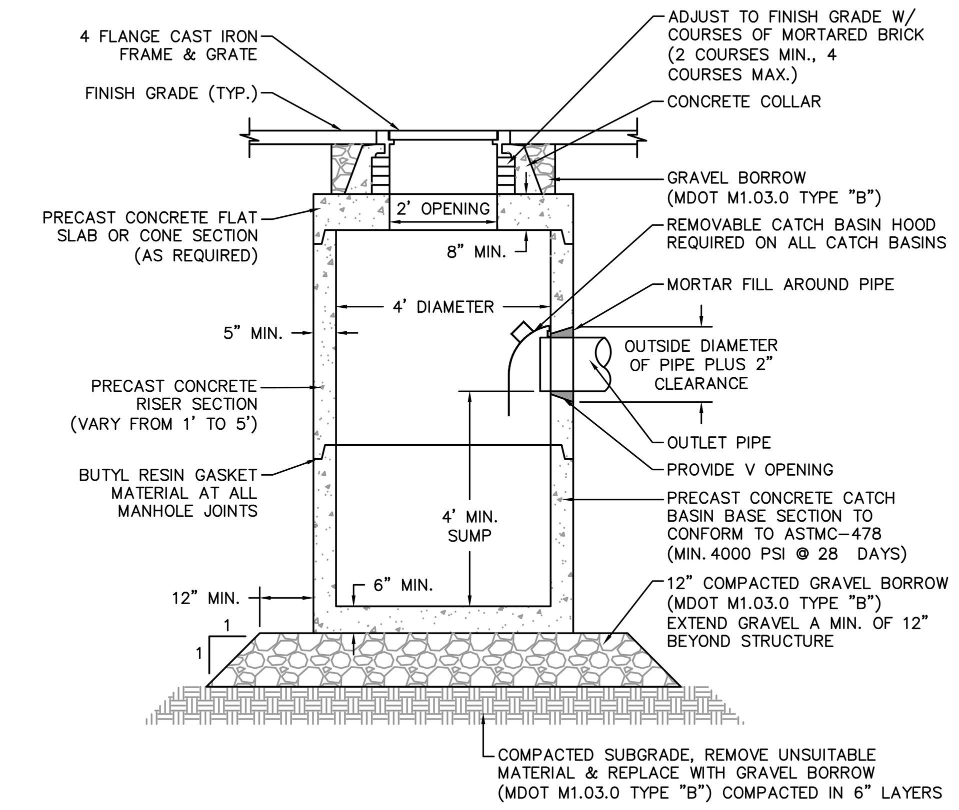

SOLID COVER

NOTES:
1. FRAME AND COVER SHALL BE DUCTILE IRON CONFORMING TO ASTM A536 GRADE 70-50-05.
2. 15" ACCESS BASINS SHALL BE NYLOPLAST MODEL 2815 AS MANUFACTURED BY ADVANCED DRAINAGE SYSTEMS, INC., OR APPROVED EQUAL.
3. ACCESS BASINS SHALL BE CUSTOM MANUFACTURED ACCORDING TO THE PLANS AND DETAIL.
4. CASTINGS SHALL BE FURNISHED WITH A BLACK PAINT.
5. SEE PLANS FOR LAYOUT AND ELEVATIONS OF DRAIN PIPES TO ACCESS BASINS.

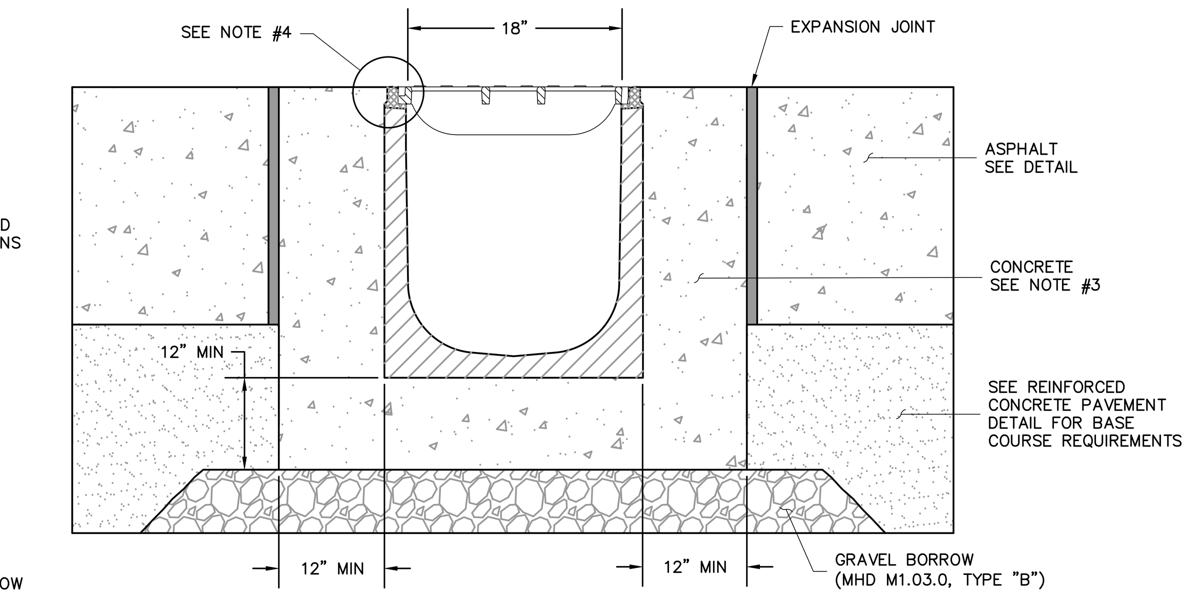
## 15" ACCESS BASIN DETAIL
NOT TO SCALE




## PERIMETER FOUNDATION SUBDRAIN DETAIL
NOT TO SCALE

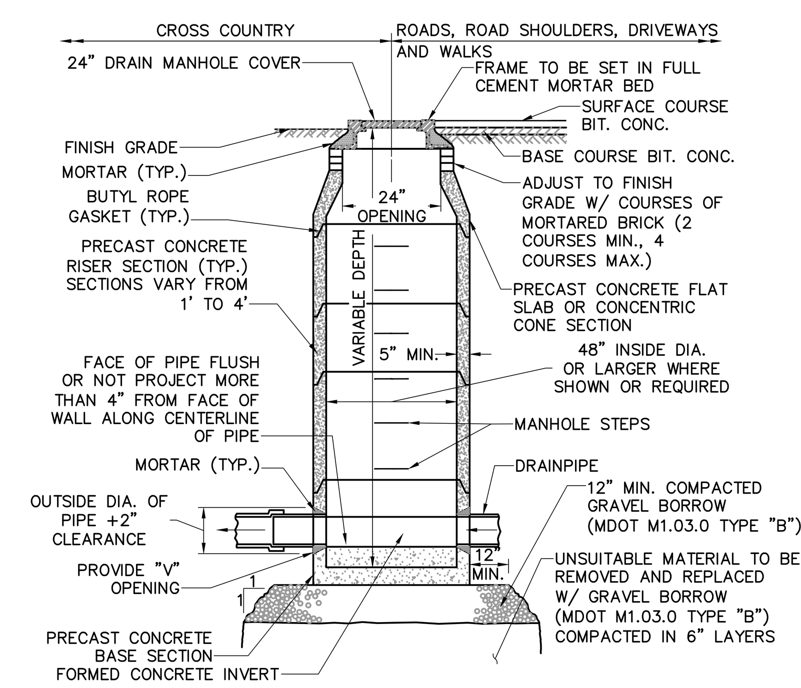



## TYPICAL CATCH BASIN DETAIL
NOT TO SCALE

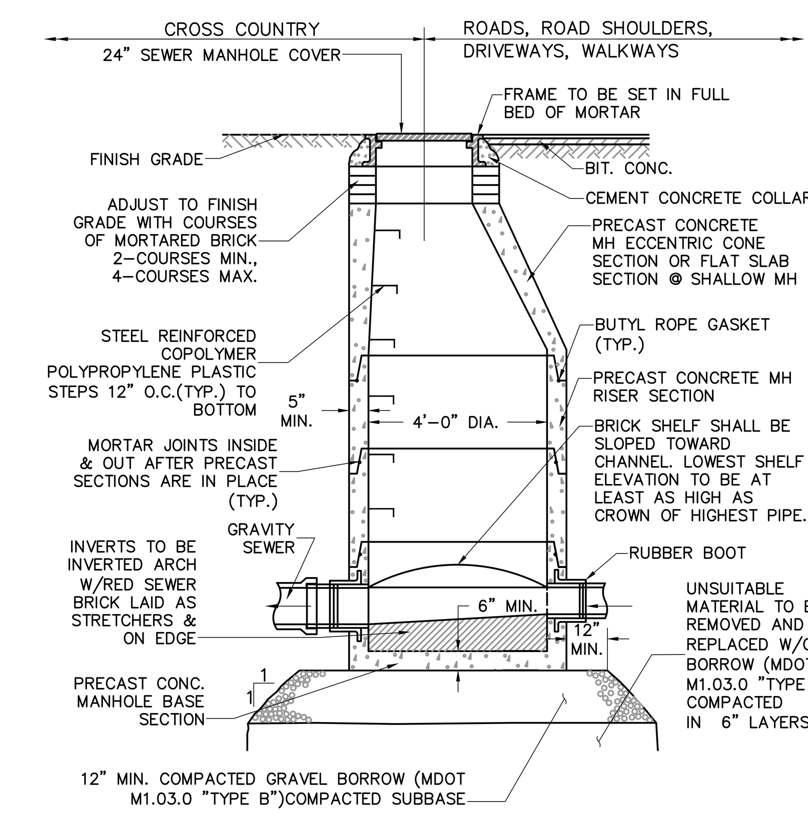



NOTES:
1. TRENCH DRAIN SHALL BE A POLYMER CONCRETE CHANNEL SYSTEM WITH A DUCTILE IRON RAIL AND GRATE.
2. TRENCH DRAIN SYSTEM AND GRATES SHALL BE H-20 LOADING.
3. CONCRETE CRADLE FOR TRENCH DRAIN SHALL BE MINIMUM 4,000 PSI. CONCRETE SHALL BE VIBRATED TO ELIMINATE AIR POCKETS.
4. THE FINISHED LEVEL OF THE SURROUNDING CONCRETE SHALL BE FLUSH WITH THE TOP OF THE CHANNEL EDGE.
5. TRENCH DRAIN SYSTEM SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.
6. ALL TRENCH DRAINS SHALL BE PROVIDED WITH AN INLINE CATCH BASIN AT THE LOW POINT OF THE SYSTEM. WIDTH OF INLINE CATCH BASIN TO MATCH WIDTH OF TRENCH DRAIN.

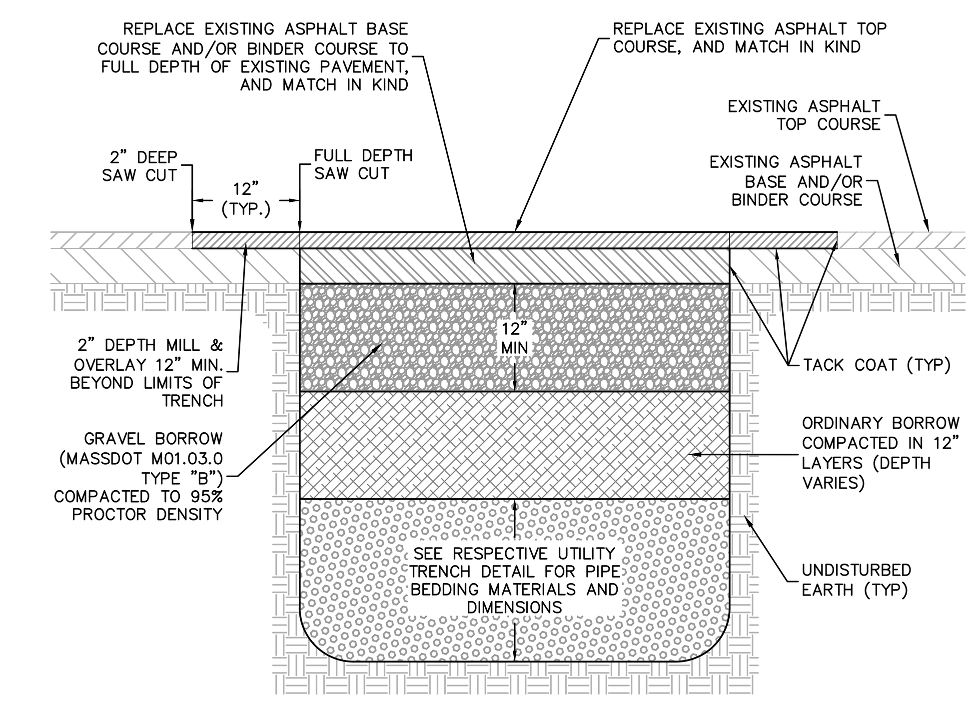
## LOADING DOCK TRENCH DRAIN DETAIL (TD-2)
NOT TO SCALE




## TYPICAL DRAIN MANHOLE DETAIL
NOT TO SCALE

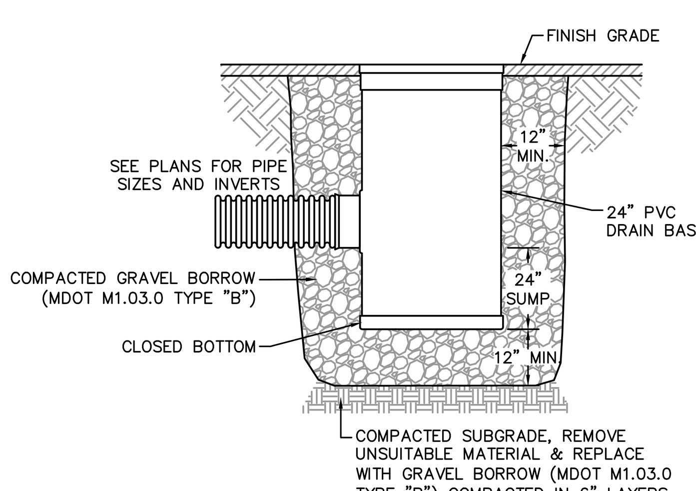



## TYPICAL SEWER MANHOLE DETAIL
NOT TO SCALE

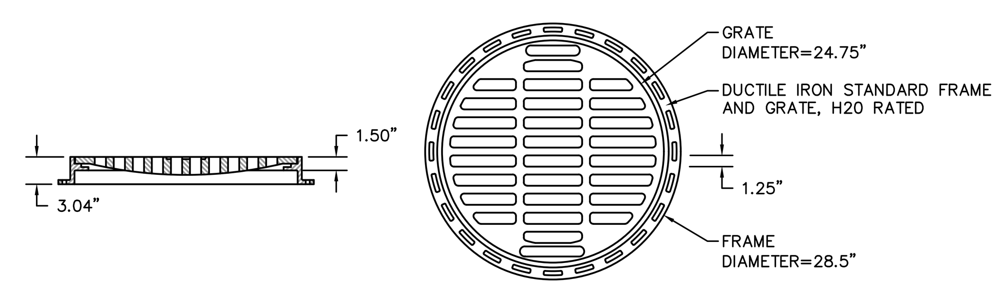



NOTES:
1. IF TWO TRENCHES ARE LESS THAN 20 FEET APART, THEN ALL PAVEMENT BETWEEN TRENCHES SHALL BE MILLED & OVERLAYED TO A TWO INCH DEPTH.
2. IN PUBLIC STREETS, IF EXISTING PAVEMENT IS LESS THAN 5 YEARS OLD, THEN FLOWABLE FILL SHALL BE USED FOR TRENCH BACKFILL, AND THE FINISHED PAVEMENT SHALL BE INFRARED TREATED IN ACCORDANCE WITH DPW STANDARDS.

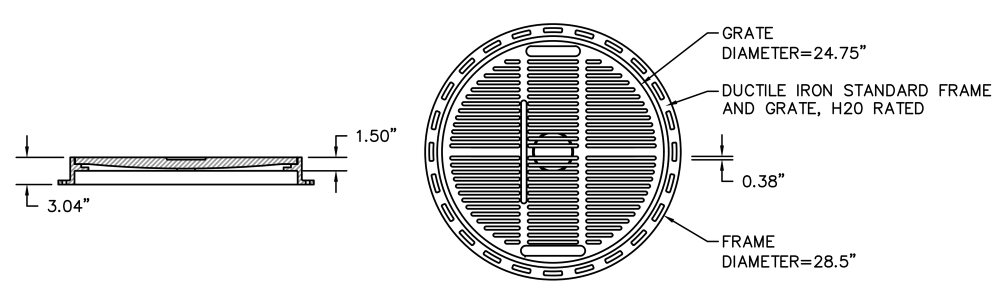
## PAVEMENT RESTORATION OVER TRENCH DETAIL
NOT TO SCALE



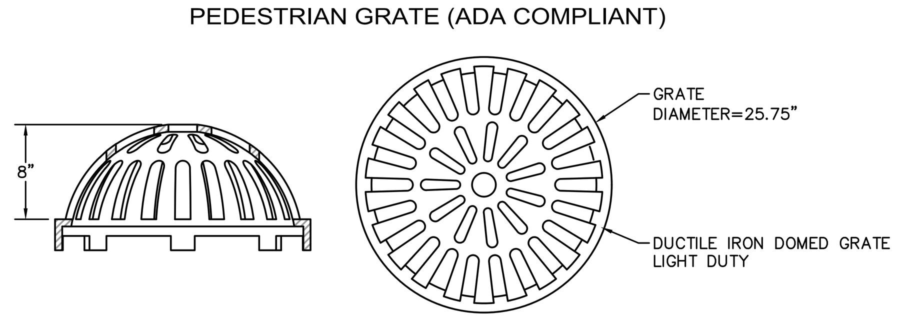

SECTION VIEW




STANDARD GRATE



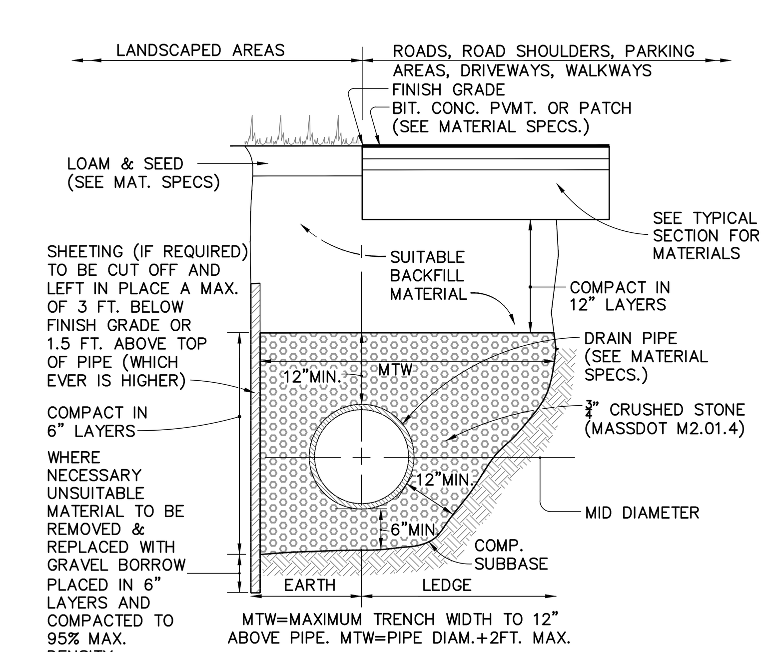

PEDESTRIAN GRATE (ADA COMPLIANT)



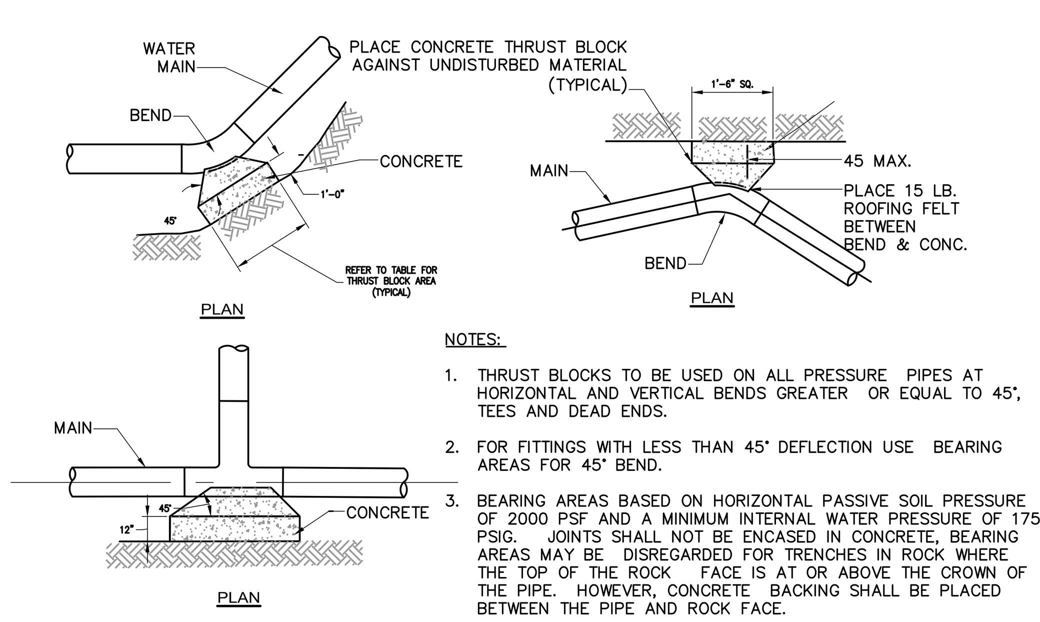

DOMED GRATE

NOTES:
1. FRAME AND GRATE SHALL BE DUCTILE IRON CONFORMING TO ASTM A536 GRADE 70-50-05.
2. 24" AREA DRAINS SHALL BE NYLOPLAST MODEL 2824 AS MANUFACTURED BY ADVANCED DRAINAGE SYSTEMS, INC., OR APPROVED EQUAL.
3. AREA DRAINS SHALL BE CUSTOM MANUFACTURED ACCORDING TO THE PLANS AND DETAIL.
4. CASTINGS SHALL BE FURNISHED WITH A BLACK PAINT.
5. SEE PLANS FOR LAYOUT AND ELEVATIONS OF DRAIN PIPES TO AREA DRAINS.

## 24" AREA DRAIN DETAIL
NOT TO SCALE




## STANDARD TRENCH DETAIL FOR UTILITY PIPE
NOT TO SCALE

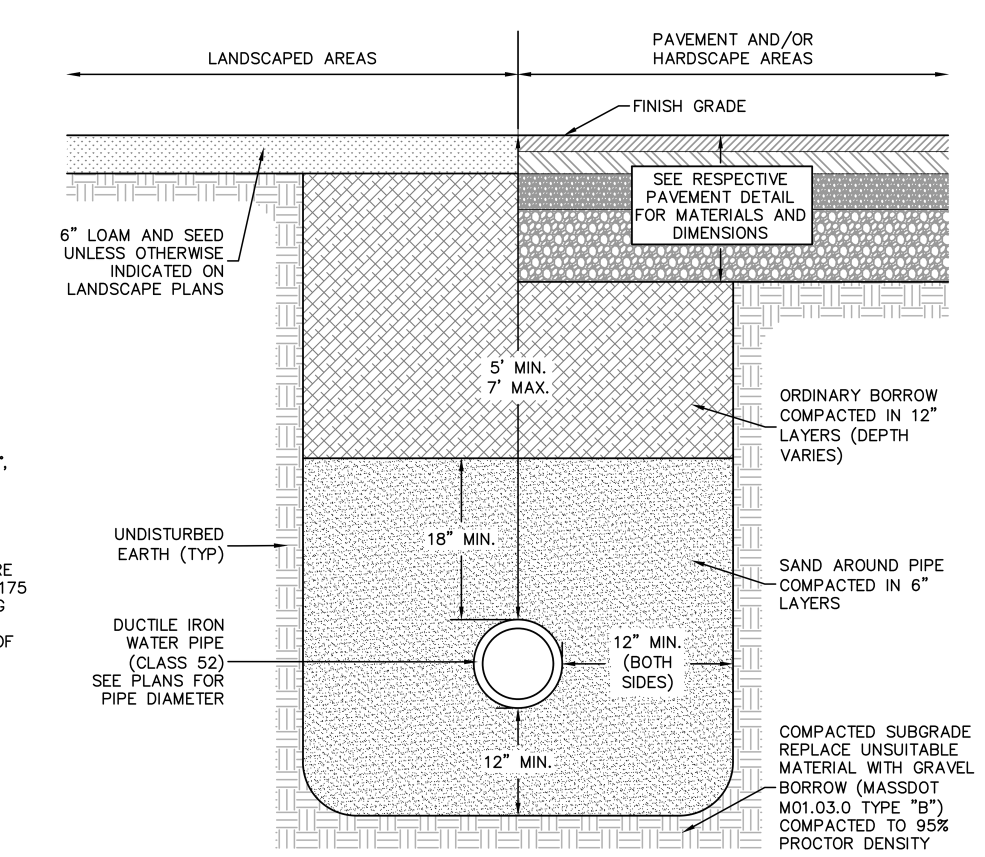



NOTES:
1. THRUST BLOCKS TO BE USED ON ALL PRESSURE PIPES AT HORIZONTAL AND VERTICAL BENDS GREATER OR EQUAL TO 45°, TEES AND DEAD ENDS.
2. FOR FITTINGS WITH LESS THAN 45° DEFLECTION USE BEARING AREAS FOR 45° BEND.
3. BEARING AREAS BASED ON HORIZONTAL PASSIVE SOIL PRESSURE OF 2000 PSF AND A MINIMUM INTERNAL WATER PRESSURE OF 175 PSI. JOINTS SHALL NOT BE ENCASED IN CONCRETE, BEARING AREAS MAY BE DISREGARDED FOR TRENCHES IN ROCK WHERE THE TOP OF THE ROCK FACE IS AT OR ABOVE THE CROWN OF THE PIPE. HOWEVER, CONCRETE BACKING SHALL BE PLACED BETWEEN THE PIPE AND ROCK FACE.

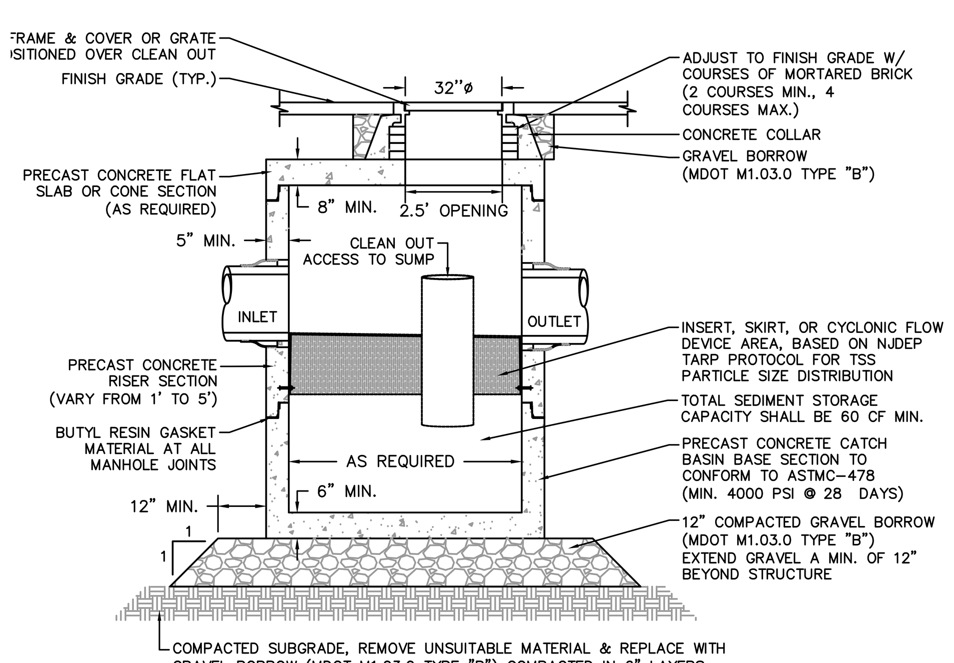
TABLE OF BEARING AREAS IN SQUARE FEET AGAINST UNDISTURBED MATERIAL FOR FITTING. *

| SIZE OF MAIN (INCHES) | 90° BEND (S.F.) | 45° BEND (S.F.) | DEAD END (S.F.) |
|---|---|---|---|
| 2 & 4 | 2.3 | 1.3 | 1.6 |
| 6 | 4.7 | 2.5 | 3.3 |
| 8 | 8.0 | 4.5 | 6.0 |
| 12 | 17.0 | 9.5 | 12.0 |

## THRUST BLOCK DETAILS
NOT TO SCALE

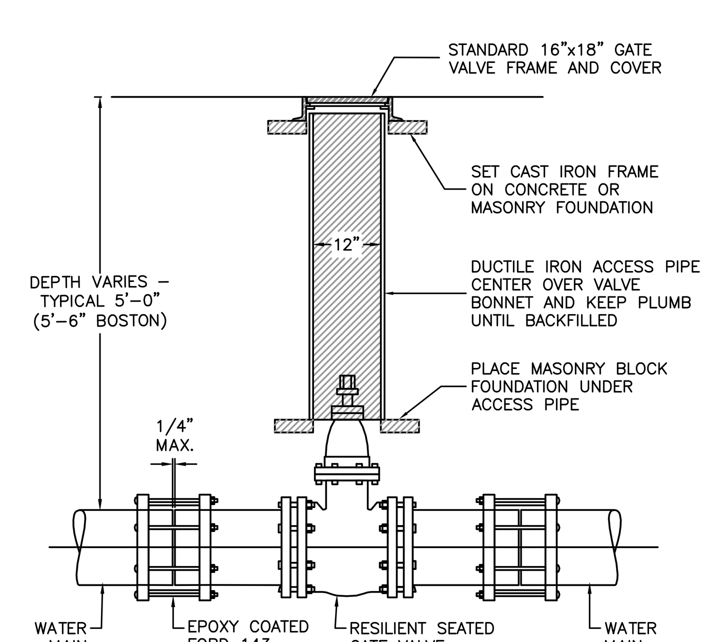



## WATER TRENCH DETAIL
NOT TO SCALE

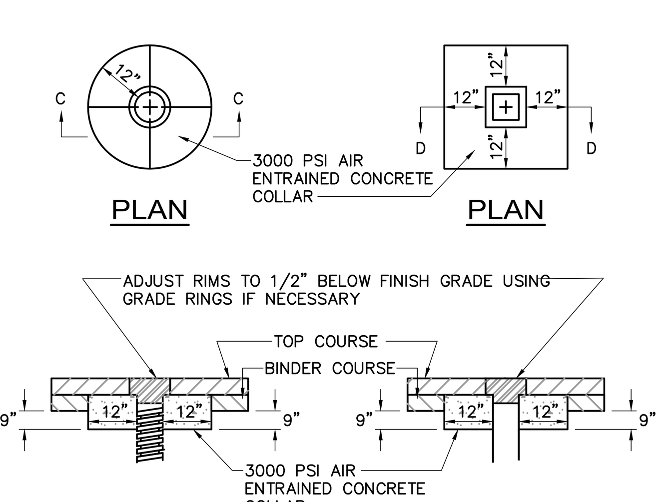



NOTE:
1. THE USE OF FLEXIBLE CONNECTIONS IS RECOMMENDED AT THE INLET AND OUTLET WHERE APPLICABLE.
2. THE COVER SHOULD BE POSITIONED OVER THE OUTLET DROP PIPE AND THE OIL CLEANOUT PIPE.
3. STRUCTURE DESIGNED FOR H20 LOADING

## WATER QUALITY STRUCTURE DETAIL
NOT TO SCALE




## GATE VALVE DETAIL
NOT TO SCALE

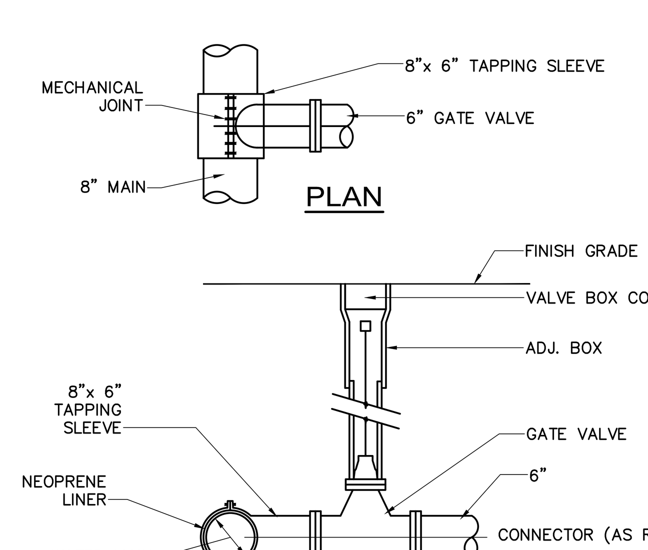



SECTION C-C
ROUND

SECTION D-D
SQUARE

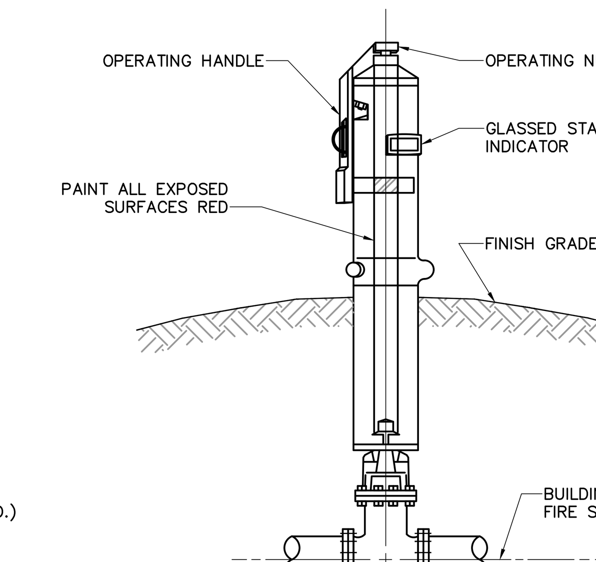
NOTE:
ALL GATE BOX RIMS TO BE SET 1/2" BELOW FINISH GRADE AFTER BINDER COURSE OR LEVELING COURSE PAVEMENT HAS BEEN PLACED.

## WATER GATE BOX DETAIL
NOT TO SCALE

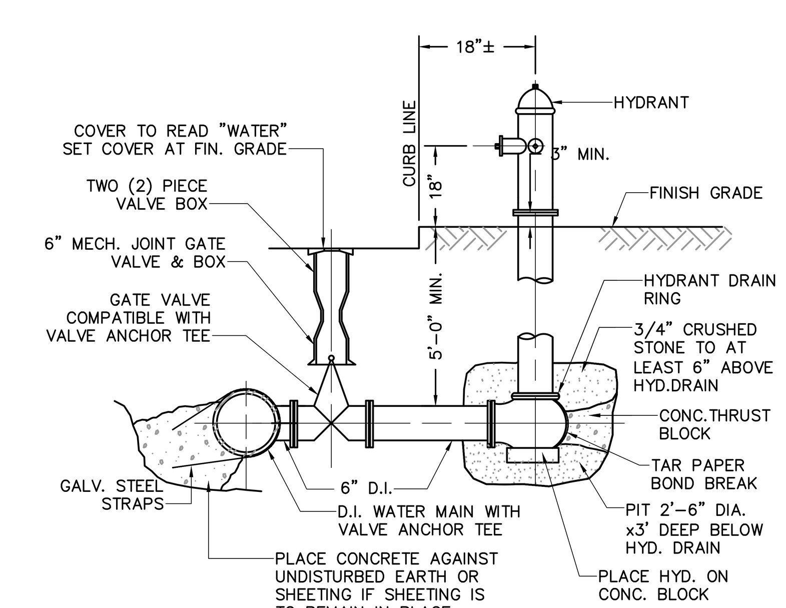



SECTION

## TAPPING SLEEVE, VALVE & BOX DETAIL
NOT TO SCALE




## POST INDICATOR VALVE DETAIL
NOT TO SCALE




NOTE: ALL JOINTS ON HYDRANT BRANCH TO BE RESTRAINED JOINTS

## FIRE HYDRANT DETAIL
NOT TO SCALE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WHITINSVILLE, MA 01588

NITSCH PROJECT #12260
COMMONWEALTH OF MASSACHUSETTS
SANDRA A. BROCK
CIVIL
No. 39417
REGISTERED PROFESSIONAL ENGINEER
4/3/2019



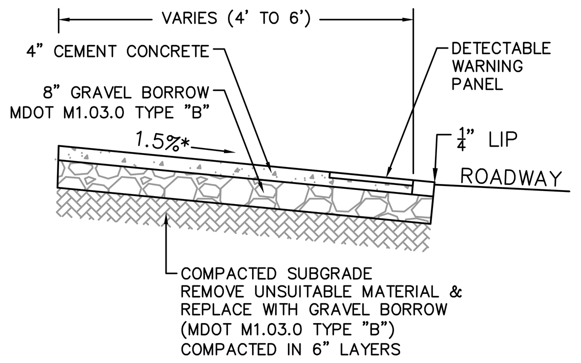
Planning Board Submission

| REVISION: | Date: |
|---|---|

DATE: 04/09/2019
SCALE: As indicated

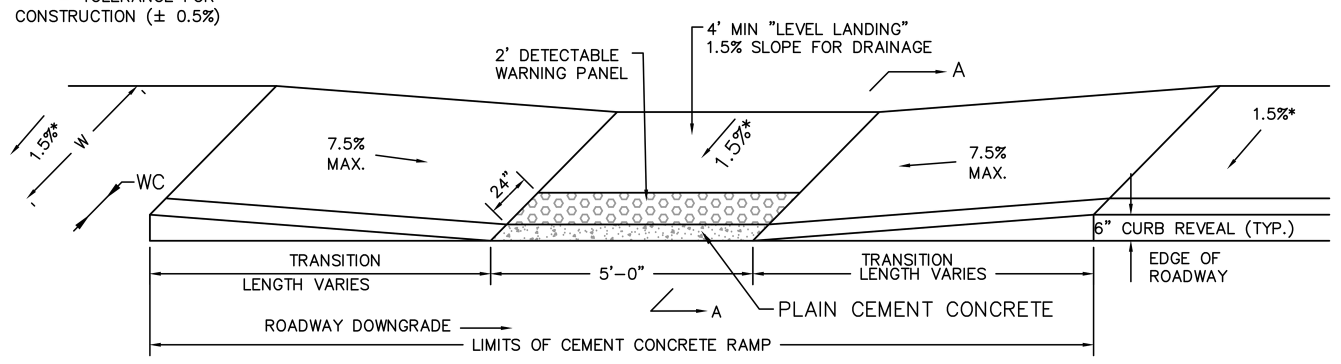
SHEET TITLE:
SITE UTILITY DETAILS

SHEET #:
C7.01

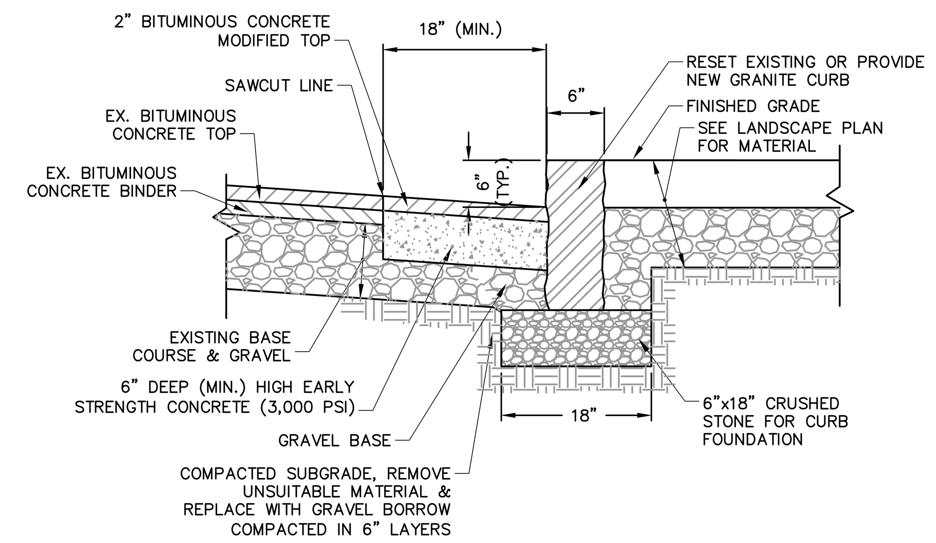



SECTION A-A

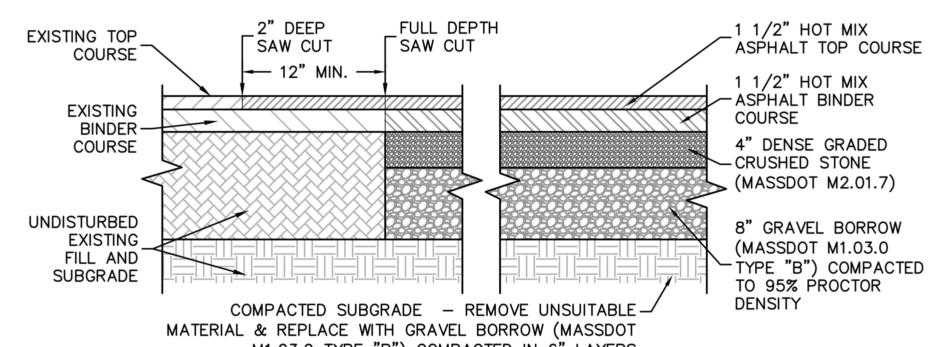
LEGEND
W = SIDEWALK WIDTH (VARIES 4' TO 6')
Wc = CURB WIDTH (VARIES 0" TO 6")
* = TOLERANCE FOR CONSTRUCTION (± 0.5%)



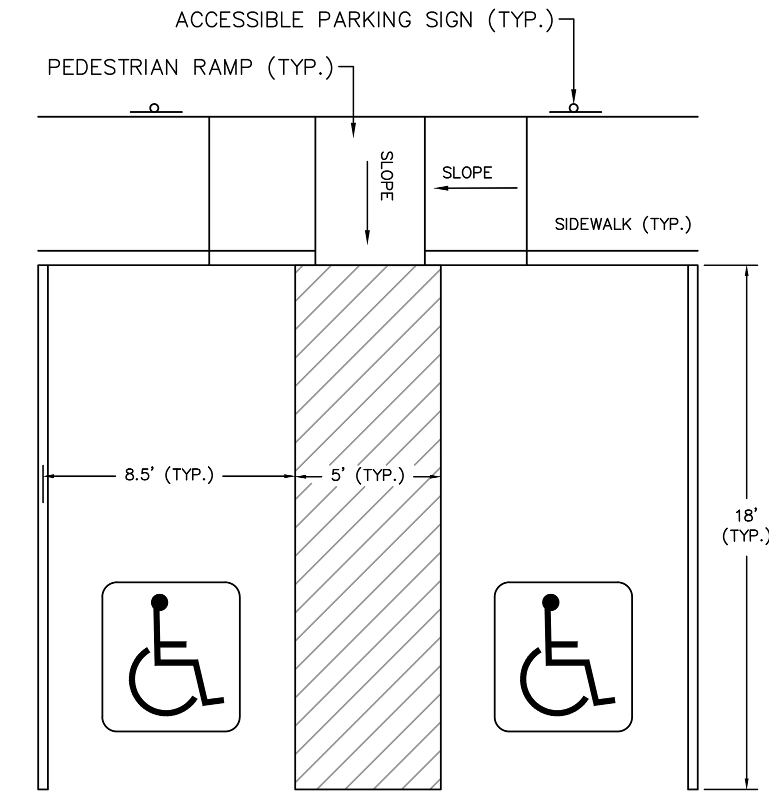

ADA COMPLIANT CURB CUT RAMP DETAIL
NOT TO SCALE



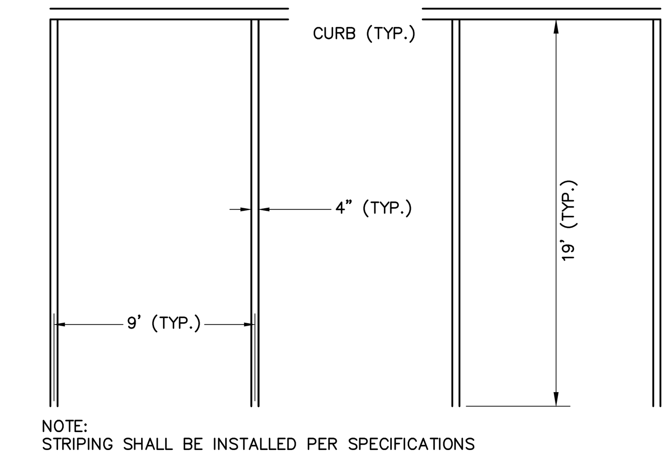

TYPICAL GRANITE CURB SECTION DETAIL
NOT TO SCALE




HOT MIX ASPHALT PAVING (TWO COURSES) DETAIL
NOT TO SCALE

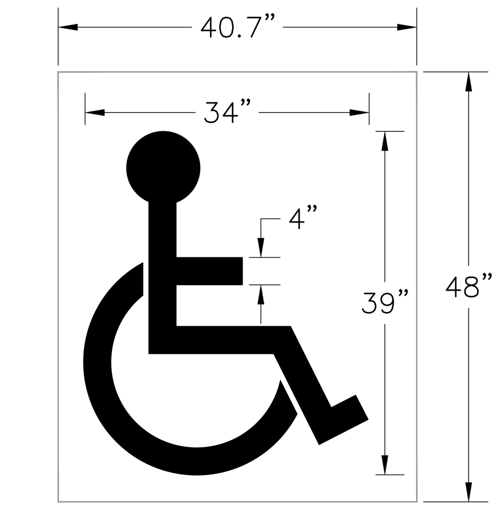



ACCESSIBLE PARKING DETAIL
NOT TO SCALE

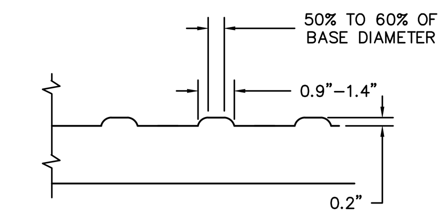



NOTE:
STRIPING SHALL BE INSTALLED PER SPECIFICATIONS

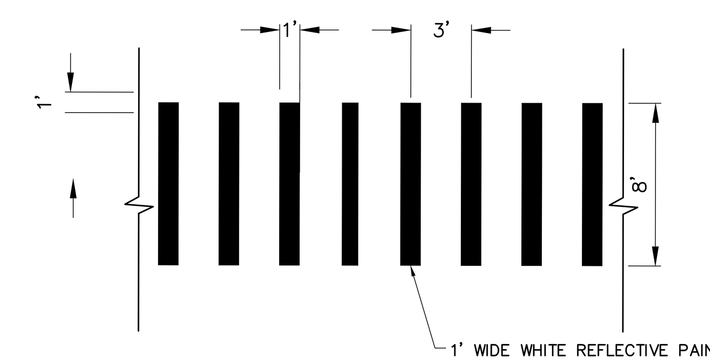
TYPICAL PARKING STRIPING DETAIL
NOT TO SCALE




ACCESSIBLE PARKING STENCIL DETAIL
NOT TO SCALE



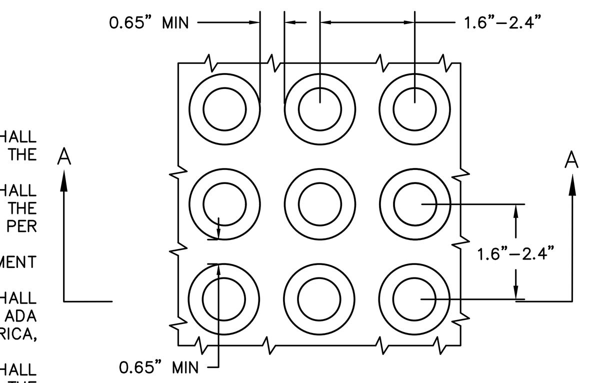

SECTION A-A




DETAIL FOR PAINTED CROSSWALK
NOT TO SCALE

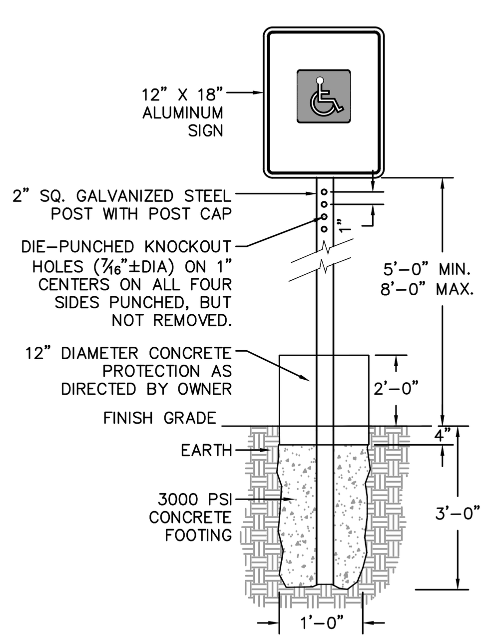
NOTES:

1. DETECTABLE WARNING PANELS SHALL BE PERMANENTLY APPLIED TO THE RAMP.
2. DETECTABLE WARNING PANELS SHALL CONTRAST VISUALLY WITH THE ADJACENT WALKWAY SURFACES PER THE FOLLOWING COLOR SCHEDULE:
   - PALE YELLOW ON CEMENT CONCRETE PEDESTRIAN RAMPS
3. DETECTABLE WARNING PANELS SHALL BE AS MANUFACTURED BY ADA SOLUTIONS, INC. OF NORTH BILLERICA, MA OR AN APPROVED EQUAL.
4. DETECTABLE WARNING PANELS SHALL BE INSTALLED PER THE MANUFACTURER'S RECOMMENDATIONS.

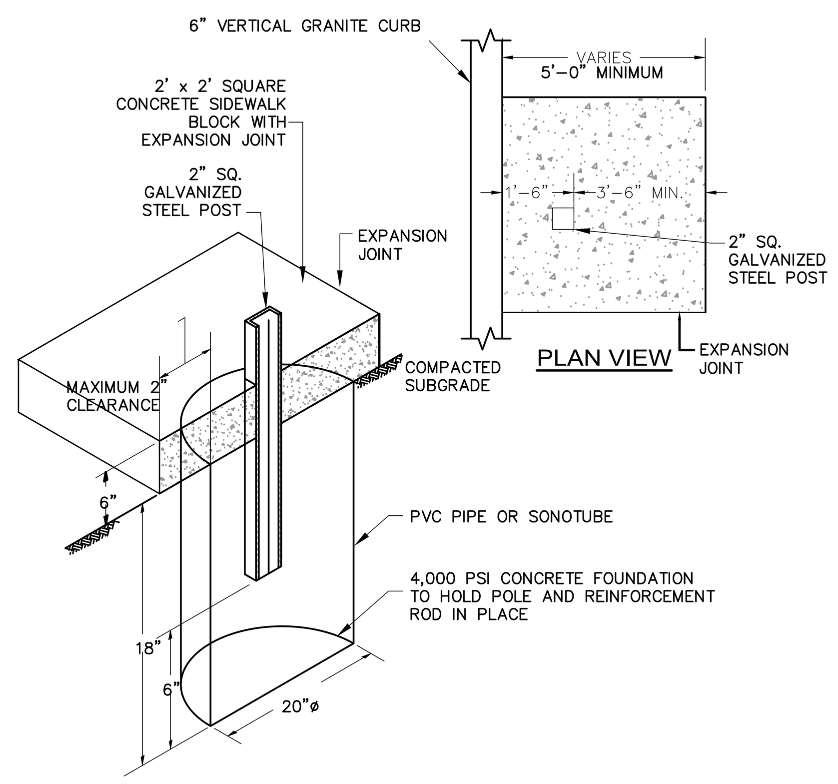



DETECTABLE WARNING PANEL

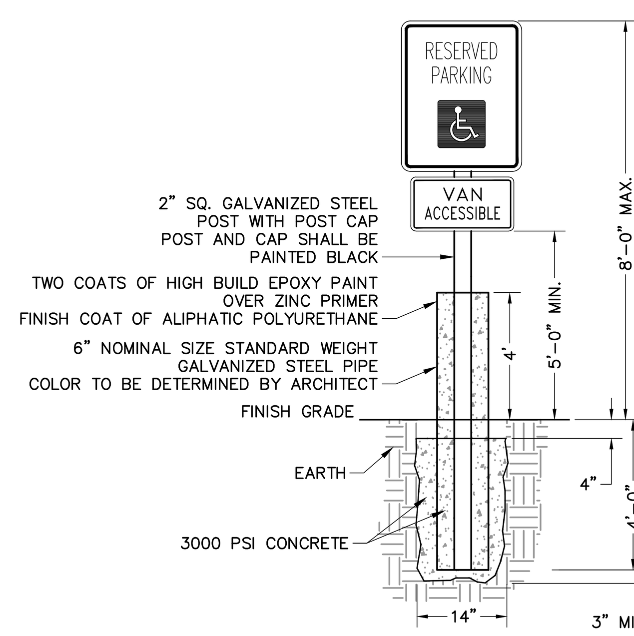
DETECTABLE WARNING PANEL FOR PEDESTRIAN RAMPS DETAIL
NOT TO SCALE



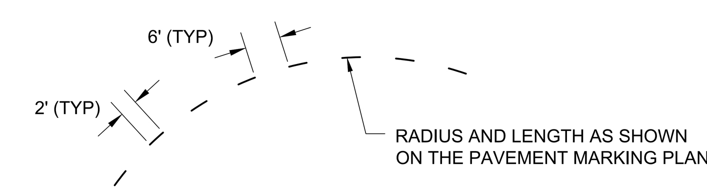

HANDICAPPED PARKING SIGNAGE DETAIL
NOT TO SCALE



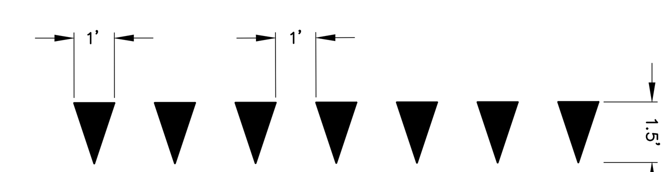

SIGN POST SETTING DETAIL IN SIDEWALK AREAS
NOT TO SCALE



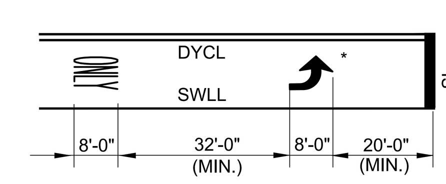

HANDICAP PARKING SIGN SET IN BOLLARD
NOT TO SCALE




DOTTED WHITE LANE LINE DETAIL




DETAIL FOR CROSSWALK ADVANCE WARNING PAVEMENT MARKINGS
NOT TO SCALE




*ARROW SHALL BE POINTED RIGHT FOR RIGHT TURN ONLY.

DIMENSION FOR TYPICAL PAVEMENT MARKINGS

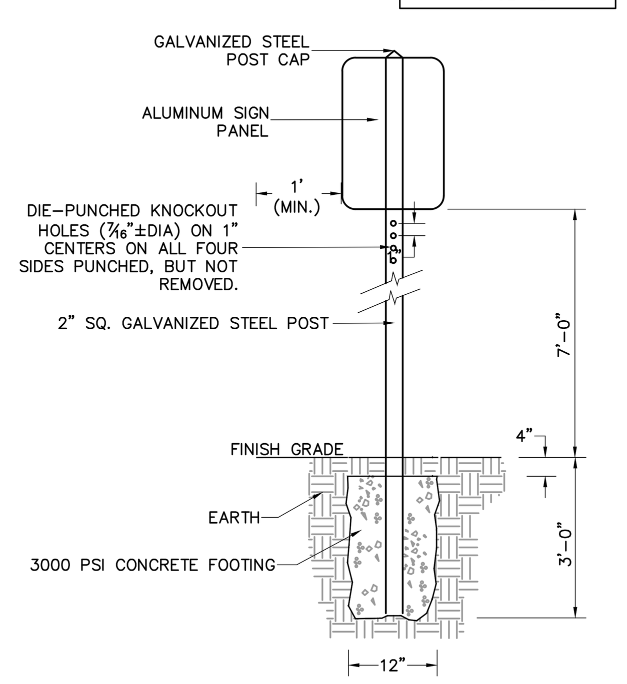
NOTES:

1. PAVEMENT MARKINGS SHALL MEET THE REQUIREMENTS OF STANDARD PAVEMENT MARKINGS FROM THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, 2009 (MUTCD).
2. PROPOSED PAVEMENT MARKINGS SHALL BE PAINT PER SPECIFICATIONS.
3. PROPOSED SIGN POSTS SHALL BE POST TYPE (TELESCOPIC POST).
4. SIGNS, SHALL BE 90° TO THE CURB AND FACING THE FLOW OF TRAFFIC.
5. SIGNS TO BE MOUNTED NEAR THE CURB LINE SHALL BE SET BACK 12" FROM THE EDGE OF THE SIGN PANEL TO THE CURB LINE. NO SIGN SHALL OVERHANG THE CURB LINE.
6. SIGNS SHALL BE MOUNTED TO PROVIDE A 7' MINIMUM CLEARANCE BETWEEN THE BOTTOM OF THE SIGN AND FINISH GRADE UNLESS OTHERWISE INDICATED.
7. FINAL LOCATION OF SIGNS TO BE COORDINATED WITH THE OWNER.

TRAFFIC SIGN SUMMARY

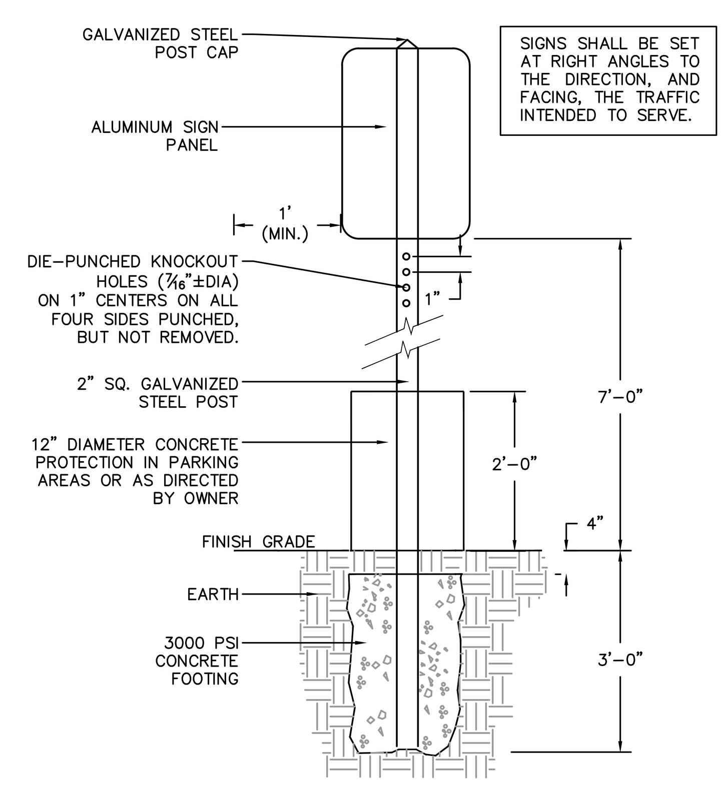
| IDENTIFICATION NUMBER | SIZE OF SIGN WIDTH | SIZE OF SIGN HEIGHT | TEXT | DIMENSIONS (in.) LETTER HEIGHT | DIMENSIONS (in.) VERTICAL SPACING | DIMENSIONS (in.) ARROW | NUMBER OF SIGNS REQUIRED | COLOR BACKGROUND | COLOR LEGEND | COLOR BORDER | MOUNTING AND NUMBER REQUIRED |
|---|---|---|---|---|---|---|---|---|---|---|---|
| R1–1 | 24" | 24" | STOP | SEE MUTCD STANDARDS | SEE MUTCD STANDARDS | SEE MUTCD STANDARDS | 10 | SEE MUTCD STANDARDS | SEE MUTCD STANDARDS | SEE MUTCD STANDARDS | POST |
| R2–1 (5MPH) | 24" | 30" | SPEED LIMIT 5 | | | | 3 | | | | POST |
| R2–1 (15MPH) | 24" | 30" | SPEED LIMIT 15 | | | | 2 | | | | POST |
| R3–1 | 24" | 24" | | | | | 1 | | | | POST |
| R3–2 | 24" | 24" | | | | | 1 | | | | POST |
| R5–1 | 24" | 24" | DO NOT ENTER | | | | 5 | | | | POST |
| R6–1R | 36" | 12" | ONE WAY | | | | 1 | | | | POST |
| R7–6C ALT. | 12" | 18" | DROP–OFF /PICK–UP ONLY | | | | 4 | | | | POST W/R7–201 BELOW SEE PLAN |
| R7–8 | 12" | 18" | RESERVED PARKING | | | | 8 | | | | POST |
| R7–8A | 12" | 6" | VAN ACCESSIBLE | | | | 4 | | | | POST W/ R7–8 SEE PLAN |
| R7–201 ALT. | 12" | 6" | NO IDLING | | | | 2 | | | | POST W/ R7–6C ABOVE SEE PLAN |
| SP–3 | 12" | 18" | BUSES ONLY NO STUDENT DROP–OFF | | | | 6 | | | | POST |
| W11–2 | 30" | 30" | | | | | 8 | | | | POST W/W16–7P BELOW |
| W16–7P | 24" | 12" | | | | | 8 | | | | POST W/W11–2 ABOVE |

SIGNS SHALL BE SET AT RIGHT ANGLES TO THE DIRECTION, AND FACING, THE TRAFFIC INTENDED TO SERVE.

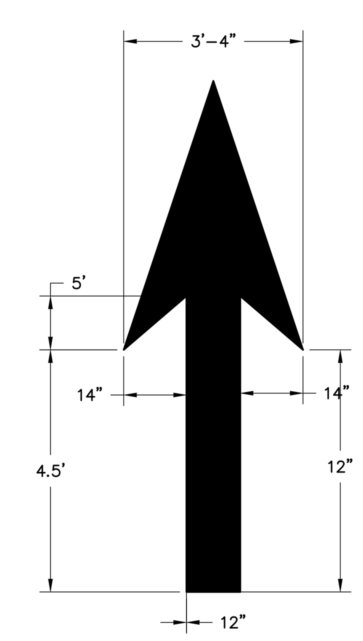



SIGN POST SETTING DETAIL IN LANDSCAPED AREAS
NOT TO SCALE

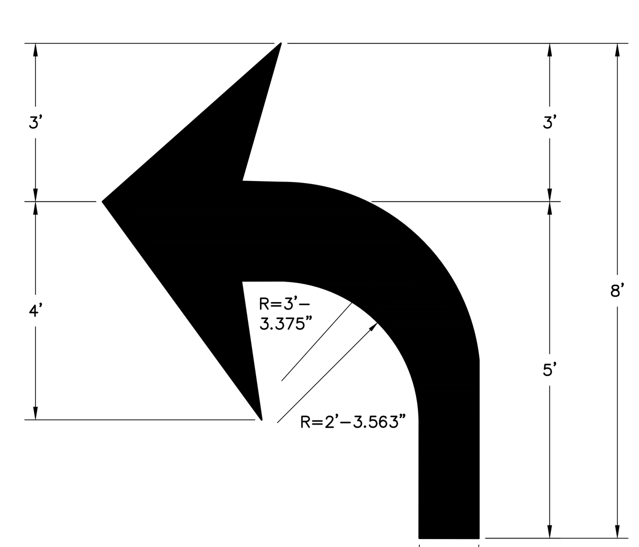
SIGNS SHALL BE SET AT RIGHT ANGLES TO THE DIRECTION, AND FACING, THE TRAFFIC INTENDED TO SERVE.



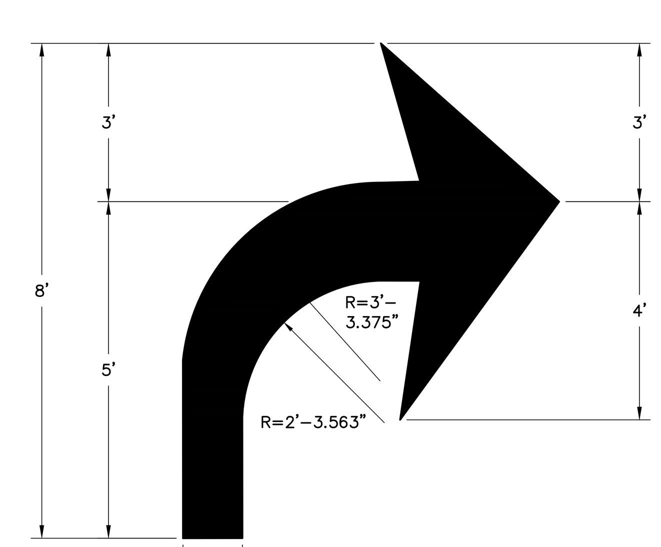

SIGN POST SETTING DETAIL
NOT TO SCALE
(SIGN PANEL UNDER 10 SF IN AREA)




ONE WAY




LEFT TURN ONLY




RIGHT TURN ONLY

PAVEMENT MARKING DETAILS
NOT TO SCALE

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DORE & WHITTIER ARCHITECTS, INC.
ARCHITECTS • PROJECT MANAGERS

Project No.
17-759

W. EDWARD BALMER ELEMENTARY SCHOOL
21 CRESCENT STREET
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NITSCH PROJECT #12260
SANDRA A. BROCK CIVIL No. 39417
4/3/2019

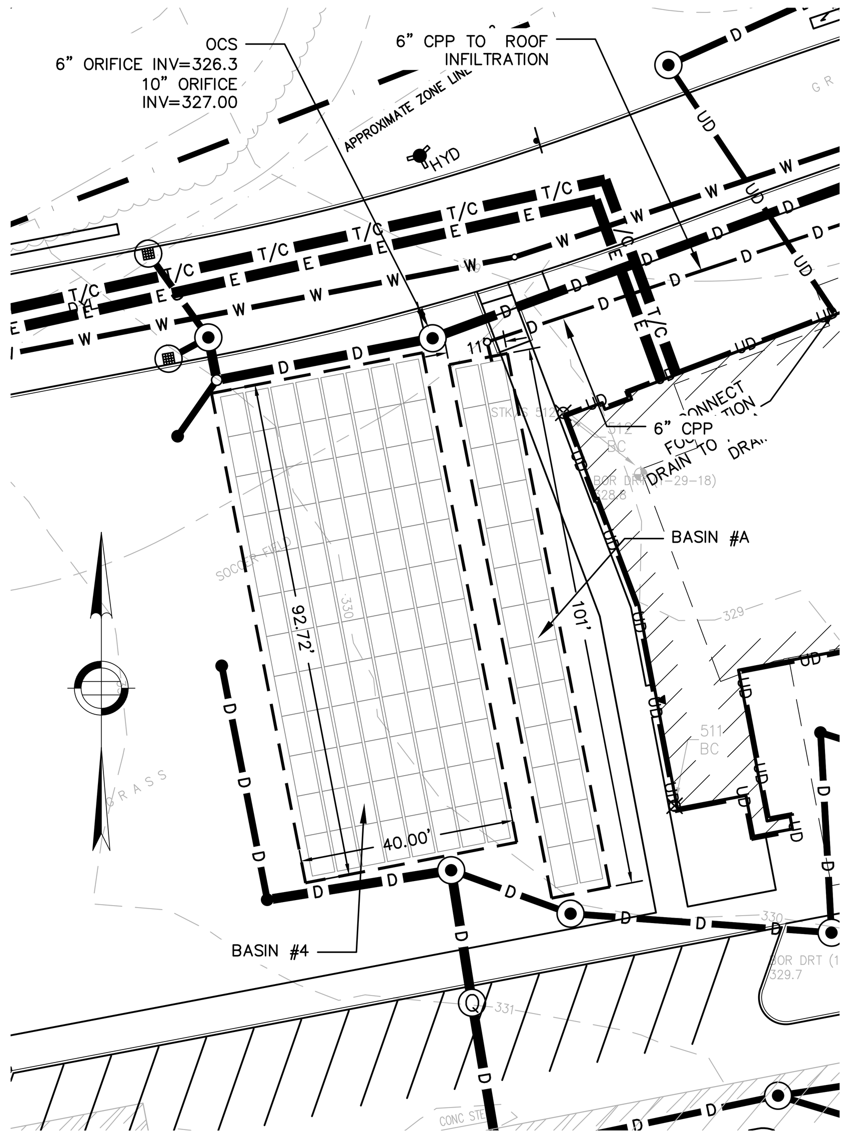
Planning Board Submission

| REVISION: | Date: |
|---|---|
| | |

DATE: 04/09/2019
SCALE: As indicated

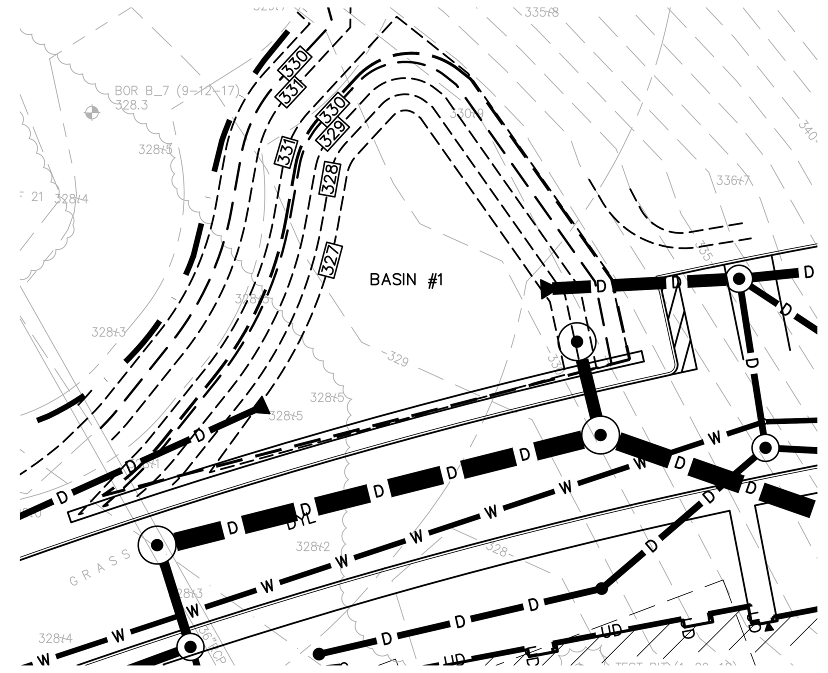
SHEET TITLE:
SITE MATERIAL DETAILS

SHEET #:
C7.02

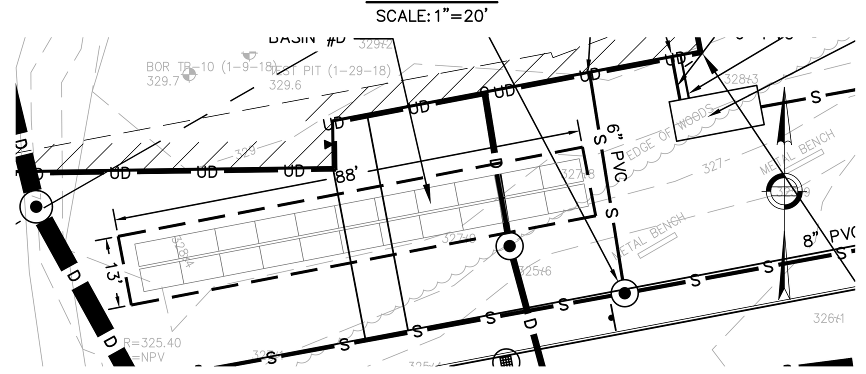



UNDERGROUND DETENTION
BASIN #4
SCALE: 1"=20'

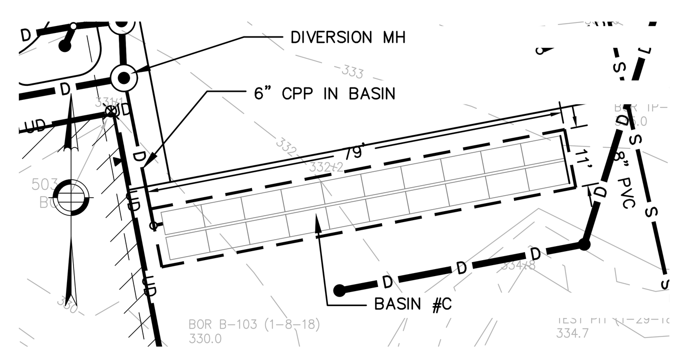
ROOF INFILTRATION SYSTEM
BASIN #A
SCALE: 1"=20'



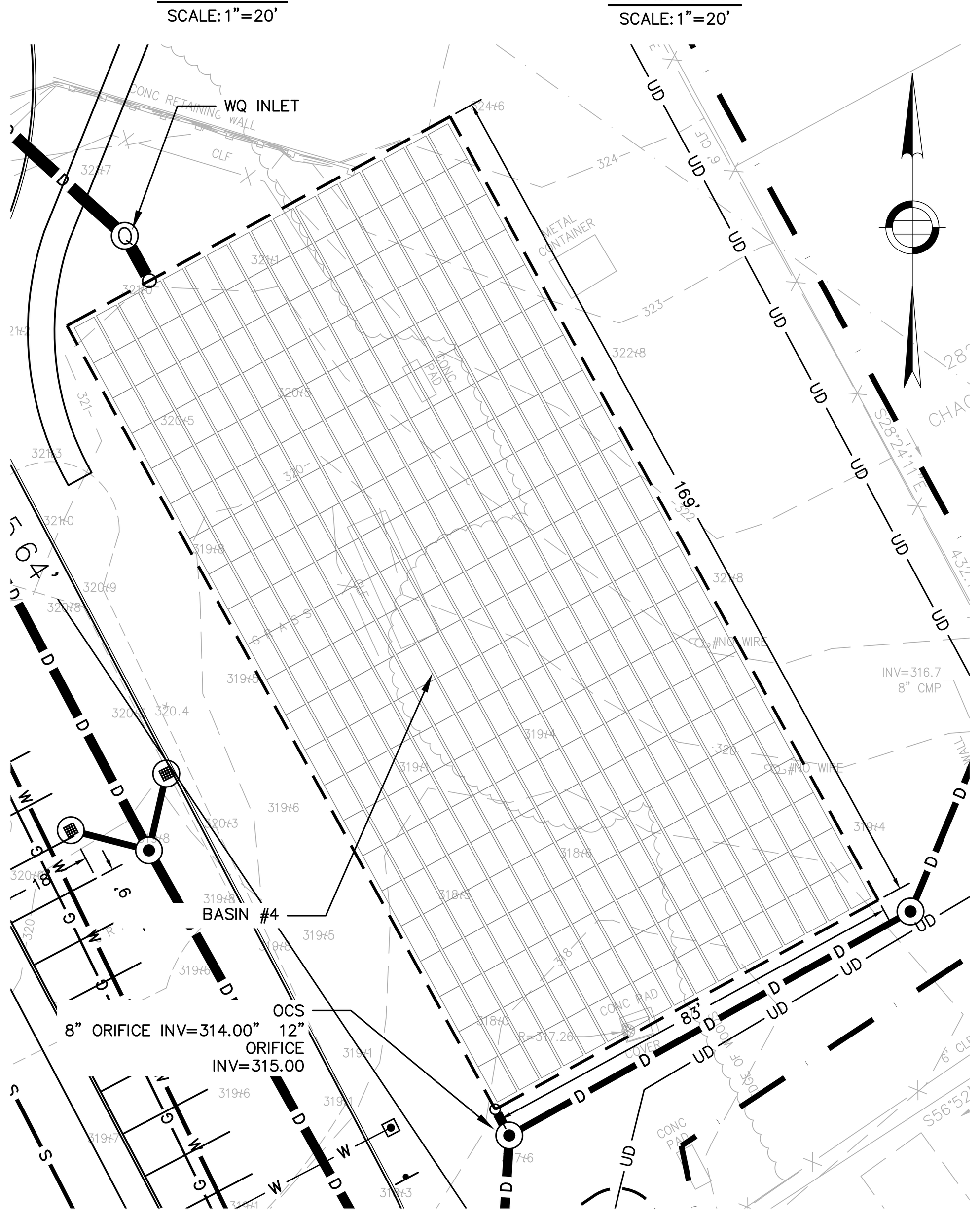

SURFACE DETENTION
BASIN #1
SCALE: 1"=20'



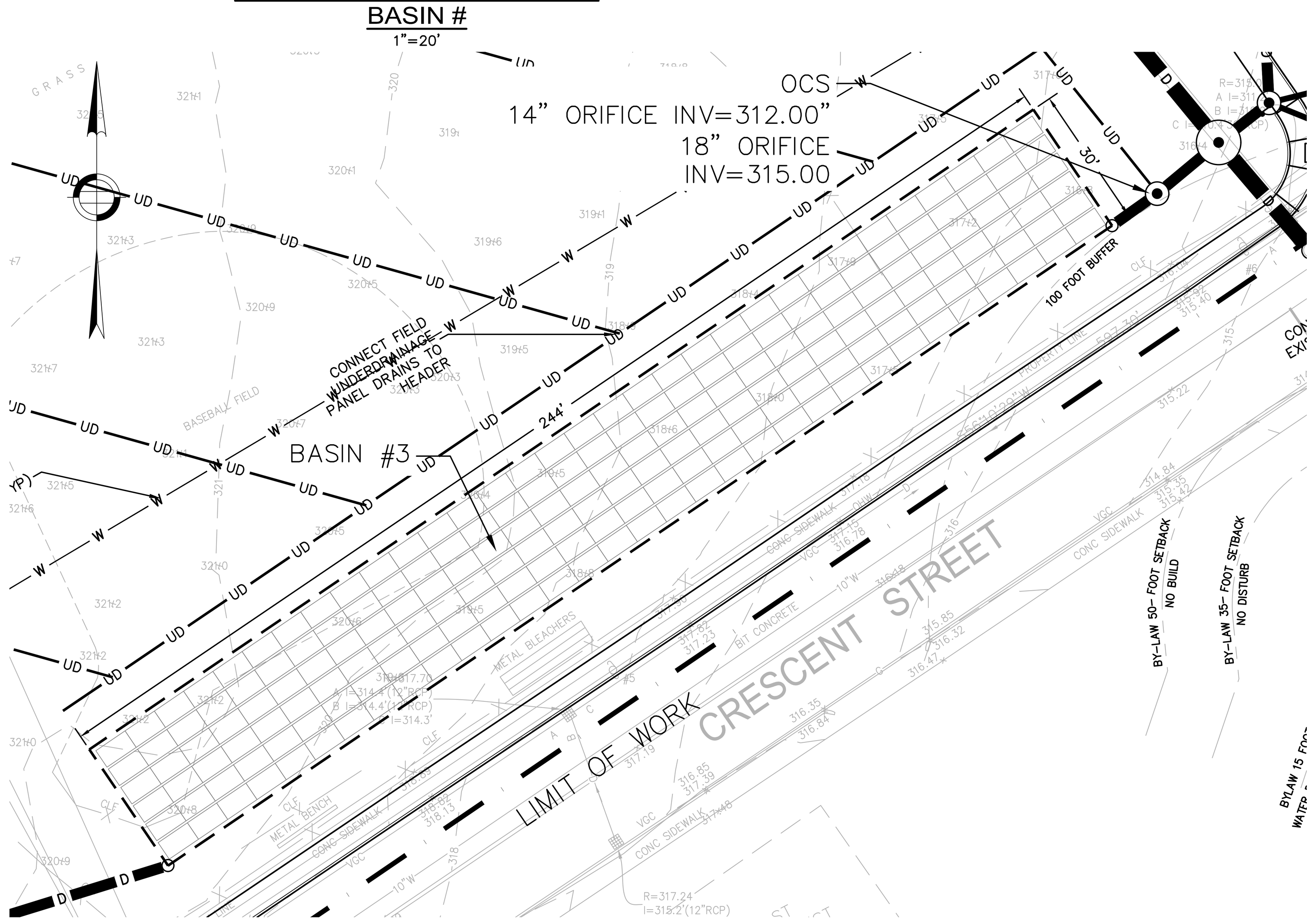
ROOF INFILTRATION SYSTEM
BASIN #D
SCALE: 1"=20'



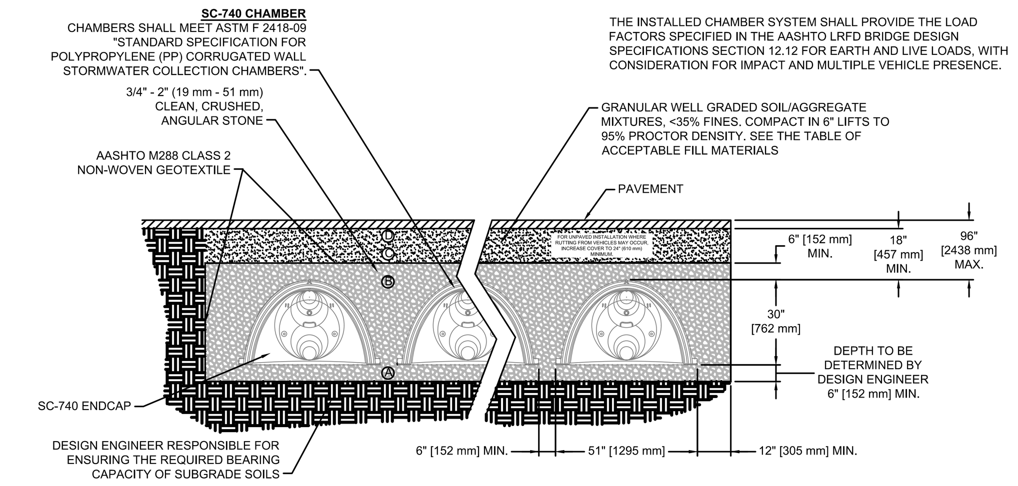

ROOF INFILTRATION SYSTEM
BASIN #C
SCALE: 1"=20'



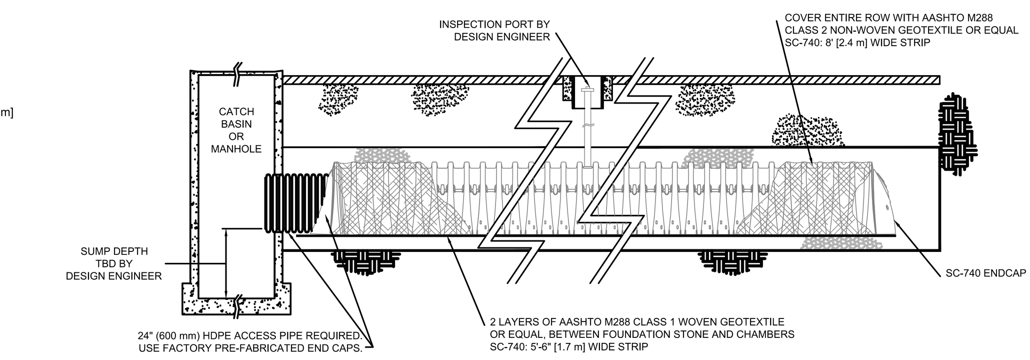

UNDERGROUND DETENTION
BASIN #
1"=20'



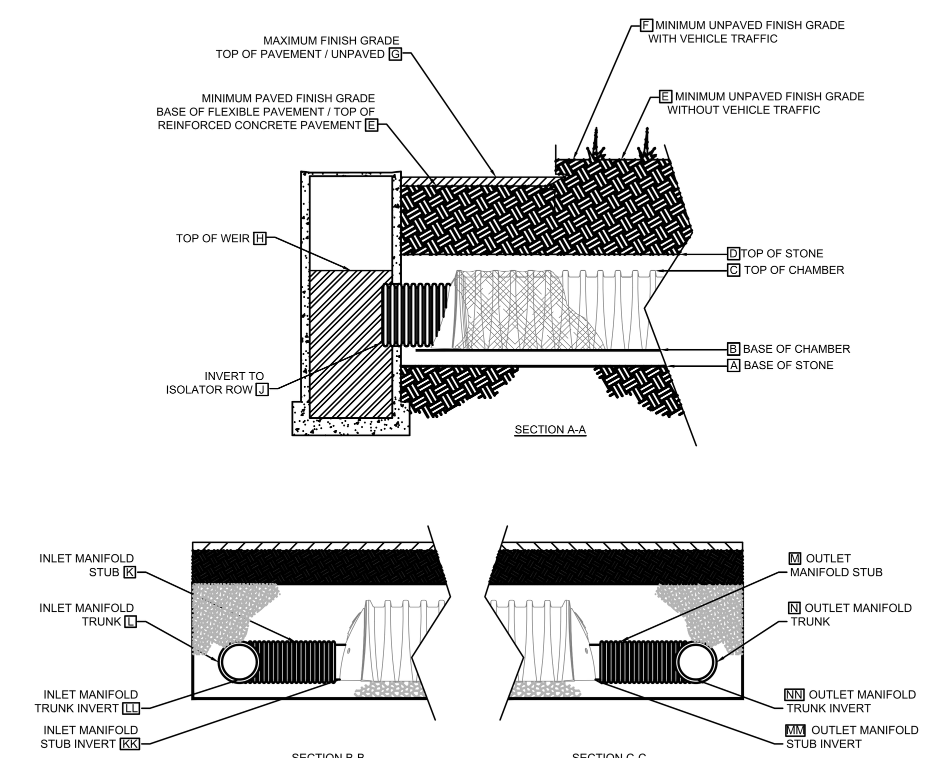

UNDERGROUND DETENTION
BASIN #
1"=20'

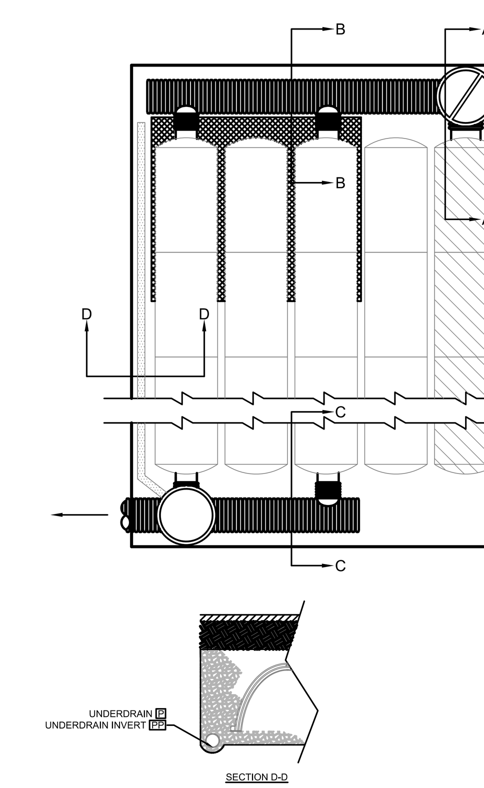



TYPICAL FIELD CROSS SECTION FOR SC740
NOT TO SCALE

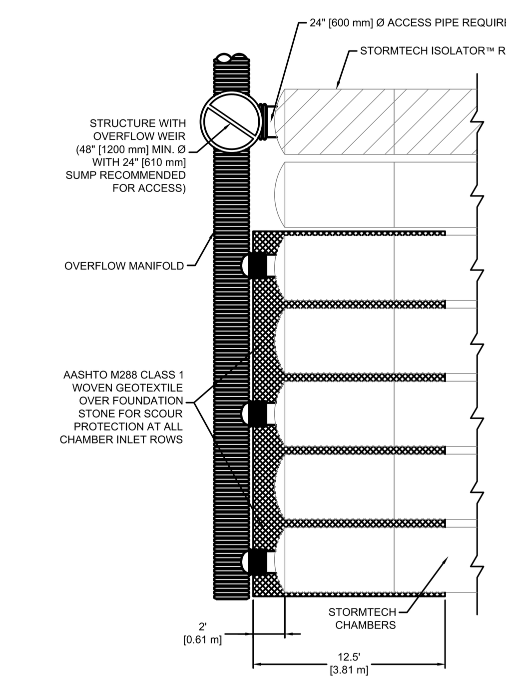



TYPICAL SECTION FOR SC740
NOT TO SCALE




UNDERDRAIN FOR SC740
NOT TO SCALE



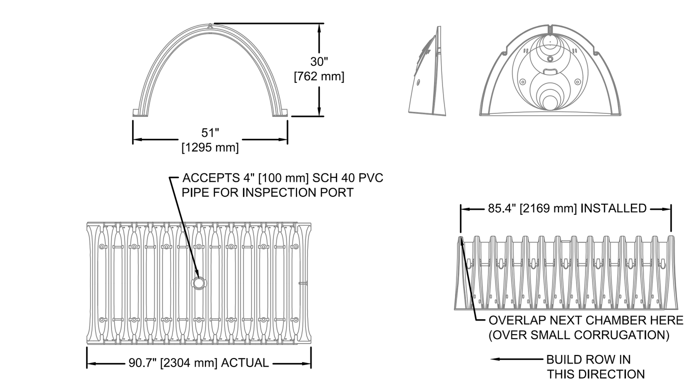

TYPICAL LAYOUT FOR SC740
NOT TO SCALE

NOTE: SUBSURFACE DETENTION CHAMBERS SHALL BE HDPE CHAMBER SYSTEMS AS MANUFACTURED BY STORMTECH, CULTEC, ADS, OR SIMILAR. SIZING BASED ON STORMTECH SYSTEM.

TYPICAL CHAMBER SECTION FOR SC740

| DETENTION BASIN | BOTTOM OF STONE | BOTTOM OF CHAMBER | NUMBER OF CHAMBERS | MIN. STONE (SEE DWG) |
|---|---|---|---|---|
| BASIN #2 (SC740) | 314.00 | 315.00 | 17 ROWS – 22 CHAM. | 82.25WX160.26L |
| BASIN #3 (SC740) | 312.50 | 313.00 | 6 ROWS – 32 CHAM. | 30.0'WX231.46'L |
| BASIN #4 (SC 740) | 326.00 | 326.50 | 8 ROWS – 12 CHAM. | 39.50WX89.06'L |
| BASIN #A (SC 310) | 327.00 | 327.50 | 2 ROWS – 13 CHAM. | 8.17WX95.76'L |
| BASIN #C (SC 310) | 327.50 | 328.00 | 2 ROWS – 10 CHAM. | 8.17'WX74.40'L |
| BASIN #D (SC 310) | 327.50 | 328.00 | 2 ROWS – 11 CHAM. | 8.17'WX81.52'L |

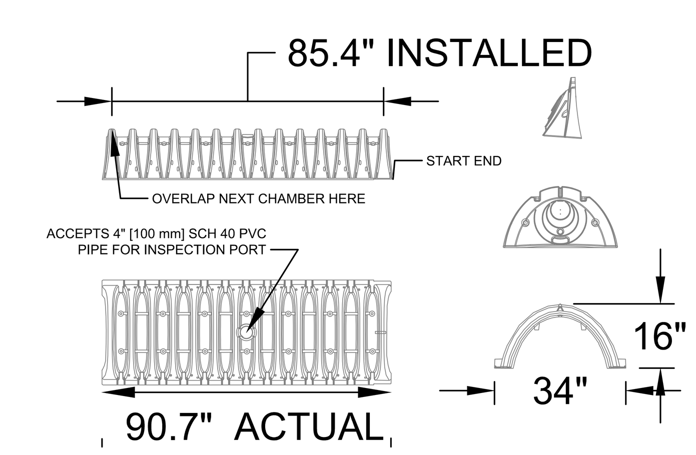
NOTE: SUBSURFACE DETENTION CHAMBERS SHALL BE HDPE CHAMBER SYSTEMS AS MANUFACTURED BY STORMTECH, CULTEC, ADS, OR SIMILAR. SIZING BASED ON STORMTECH SYSTEM.




NOMINAL CHAMBER SPECIFICATIONS

| | |
|---|---|
| SIZE (W x H x INSTALLED LENGTH) | 51.0" x 30.0" x 85.4" [1295 mm x 762 mm x 2169 mm] |
| CHAMBER STORAGE | 45.9 CUBIC FEET [1.30 m³] |
| MINIMUM INSTALLED STORAGE | 74.9 CUBIC FEET [2.12 m³] |
| WEIGHT | 75 lbs. [33.6 kg] |

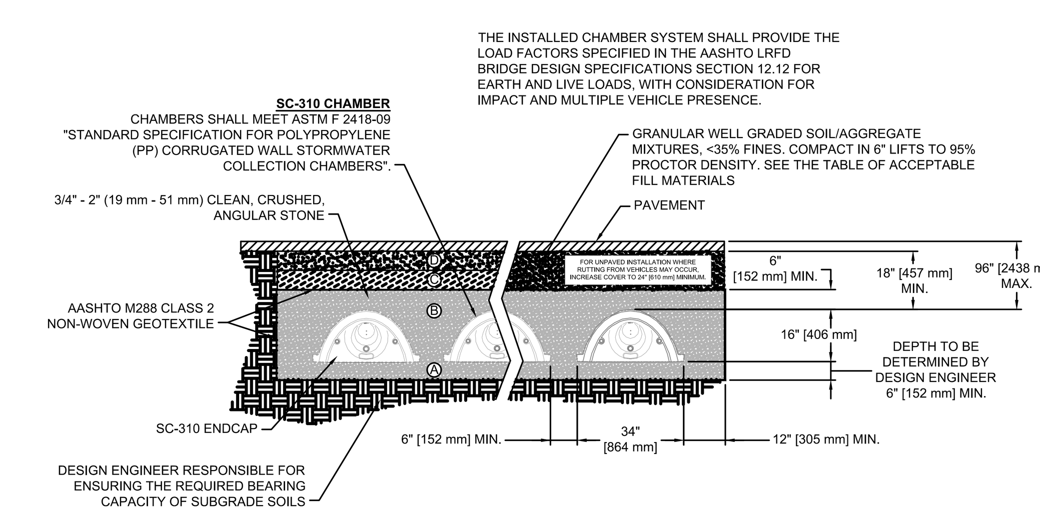
TYPICAL CHAMBER SECTION FOR SC740
NOT TO SCALE



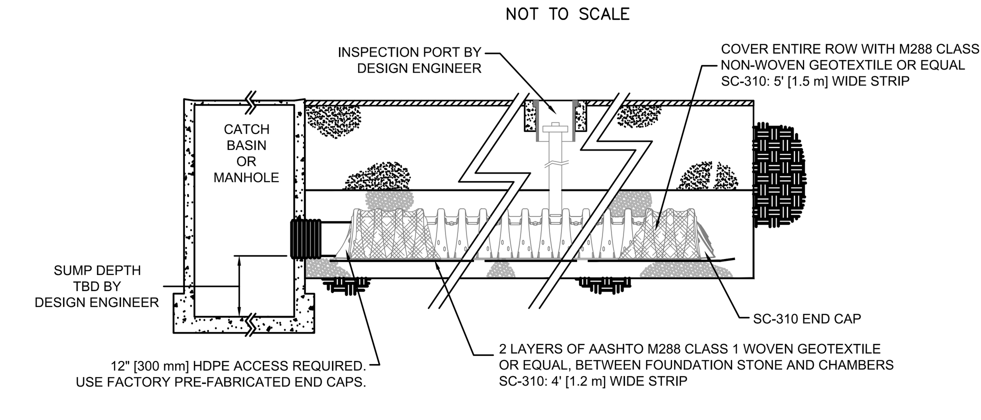

NOMINAL CHAMBER SPECIFICATIONS

| | |
|---|---|
| SIZE (W x H x INSTALLED LENGTH) | 34.0" x 16.0" x 85.4" [864 mm x 406 mm x 2169 mm] |
| CHAMBER STORAGE | 14.7 CUBIC FEET [0.42 m³] |
| MINIMUM INSTALLED STORAGE | 31.0 CUBIC FEET [0.88 m³] |
| WEIGHT | 35 lbs. [16.8 kg] |

TYPICAL CHAMBER SECTION FOR SC310
NOT TO SCALE




TYPICAL FIELD CROSS SECTION FOR SC310
NOT TO SCALE




TYPICAL CHAMBER SECTION FOR SC310
NOT TO SCALE

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Project No. 17-759

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NITSCH PROJECT #12260
SANDRA A. BROCK CIVIL No. 39417

Planning Board Submission

| REVISION: | Date: |
|---|---|
| | |

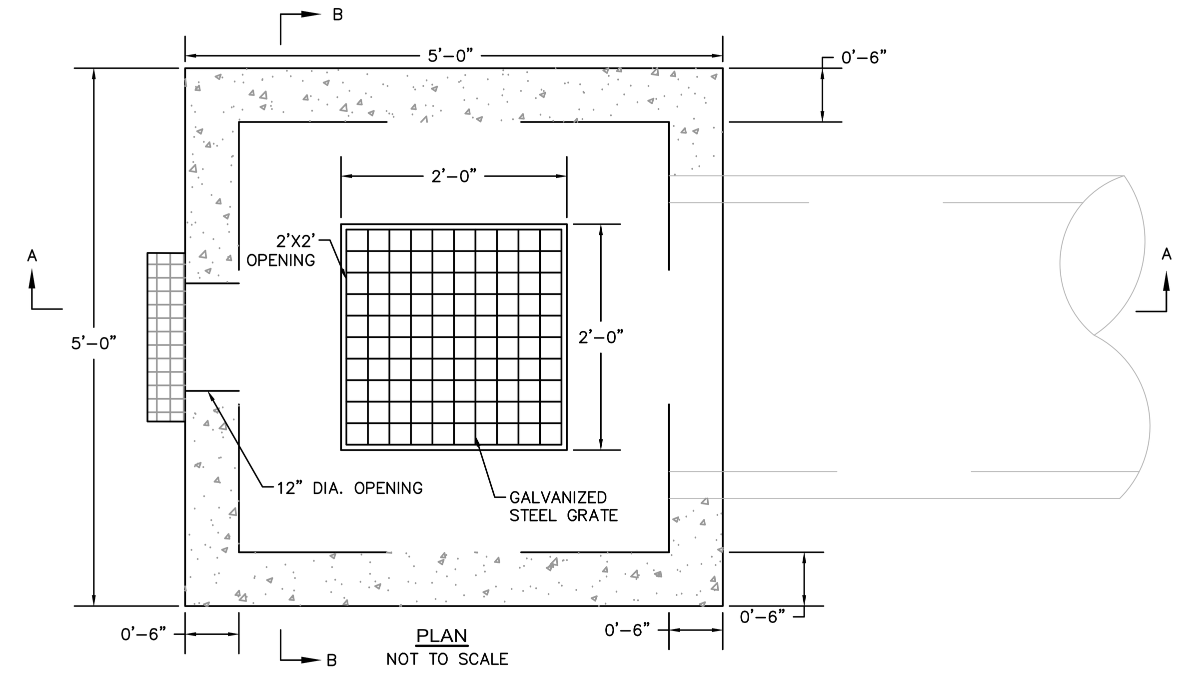
DATE: 04/09/2019
SCALE: As indicated

SHEET TITLE:
SITE DRAINAGE DETAILS

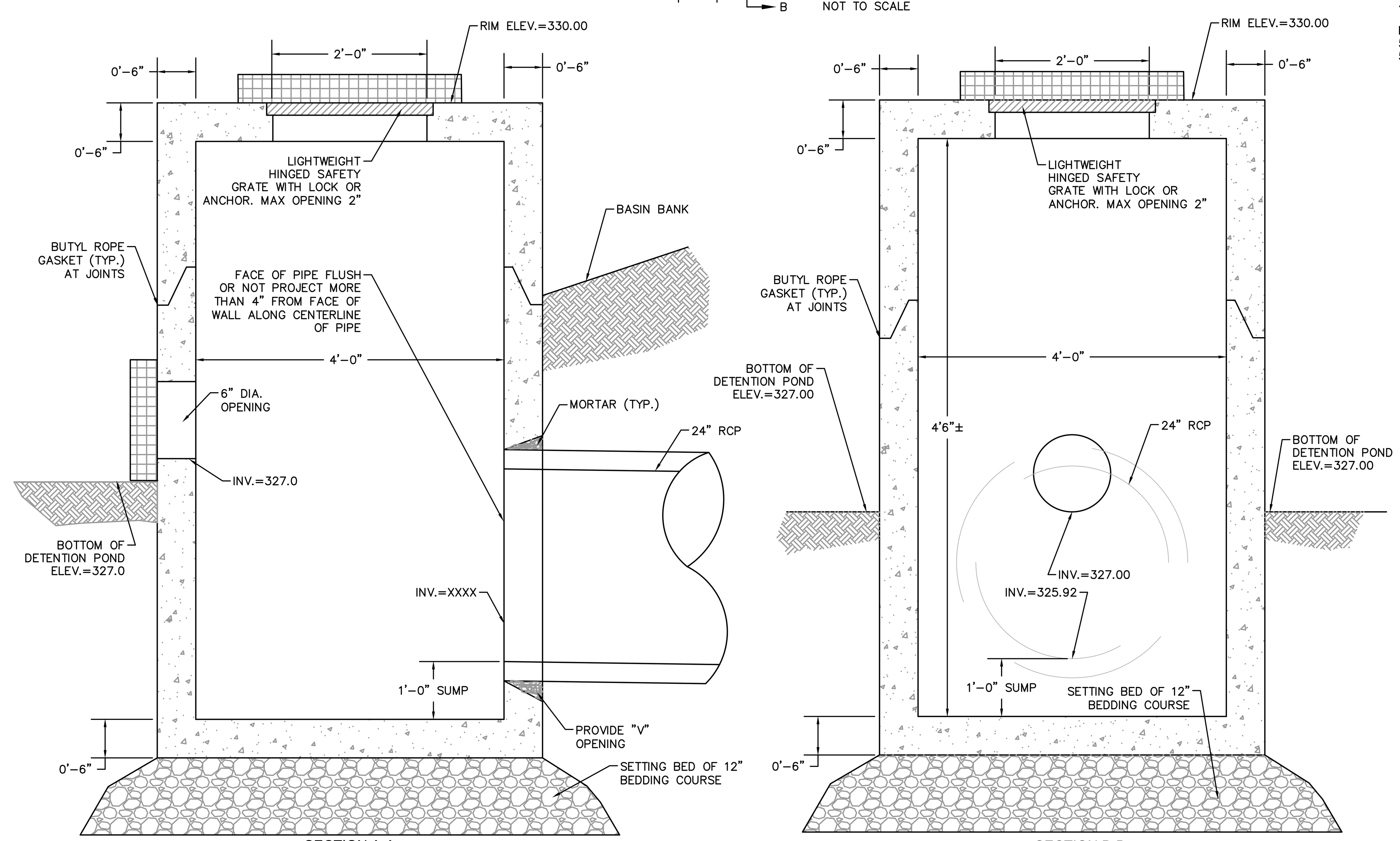
SHEET #:
C7.03

NOTE:
1. STRUCTURE TO BE PRE-CAST CONCRETE, AND SHALL BE 5,000 PSI MINIMUM AFTER 28 DAYS
2. GALVANIZED STEEL GRATE SHALL BE BOLTED TO STRUCTURE.

NOTE TO DESIGNER – UPDATE OUTLETS AND DIMENSION PER DESIGN. ADD TRASH RACK/SAFETY SCREENS AS NEEDED.



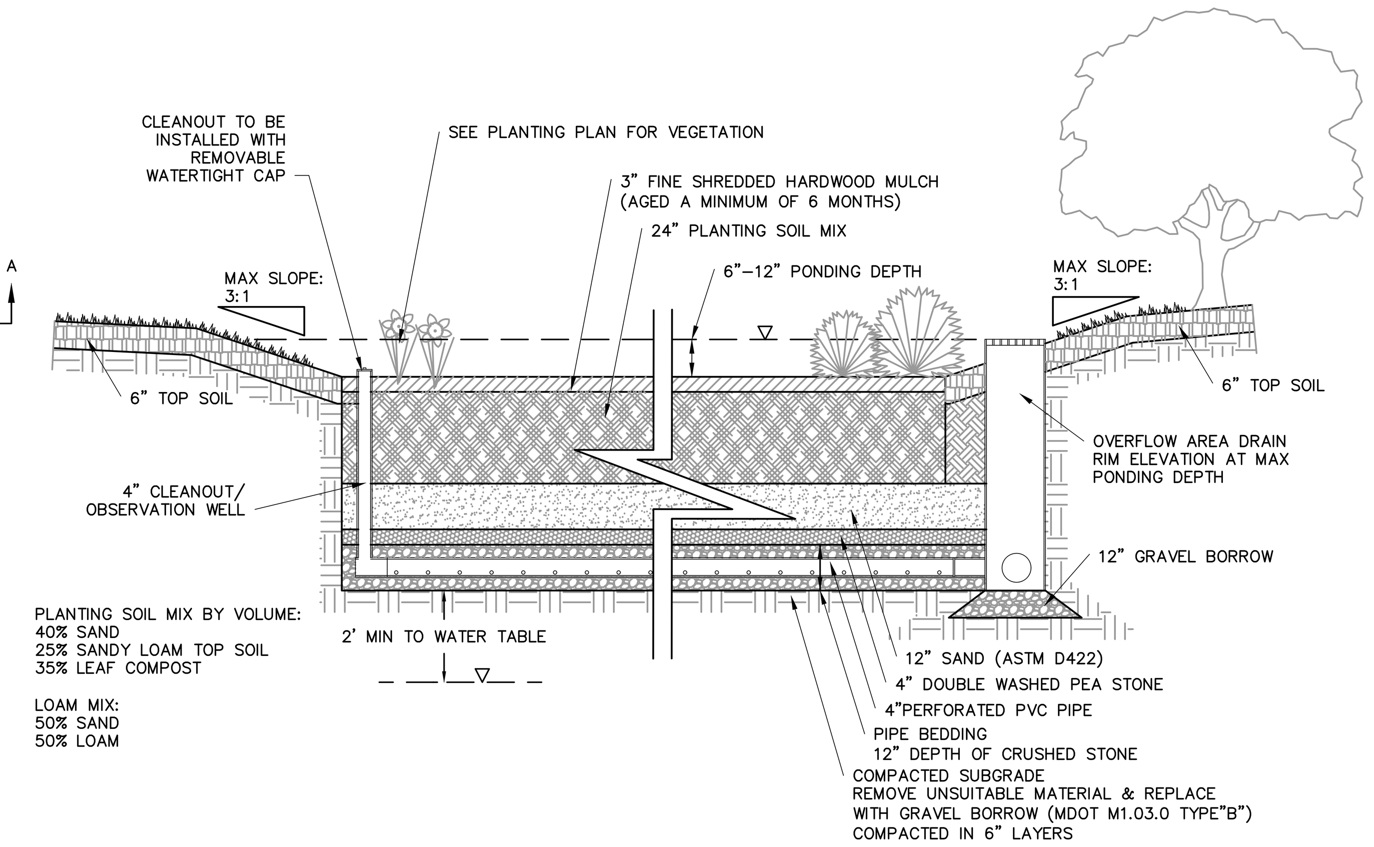

PLAN
NOT TO SCALE



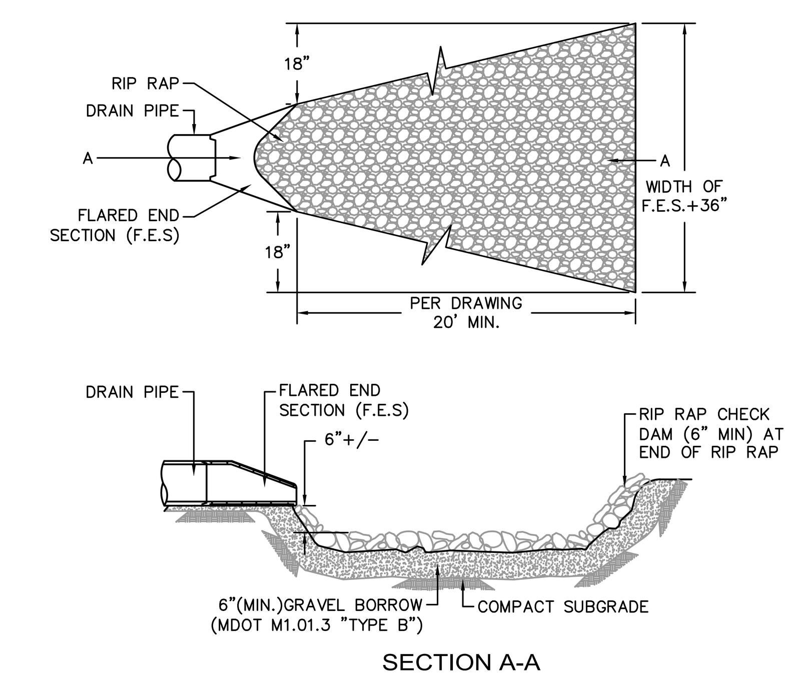

SECTION A-A
NOT TO SCALE

SECTION B-B
NOT TO SCALE

## SURFACE BASIN OUTLET CONTROL STRUCTURE
NOT TO SCALE

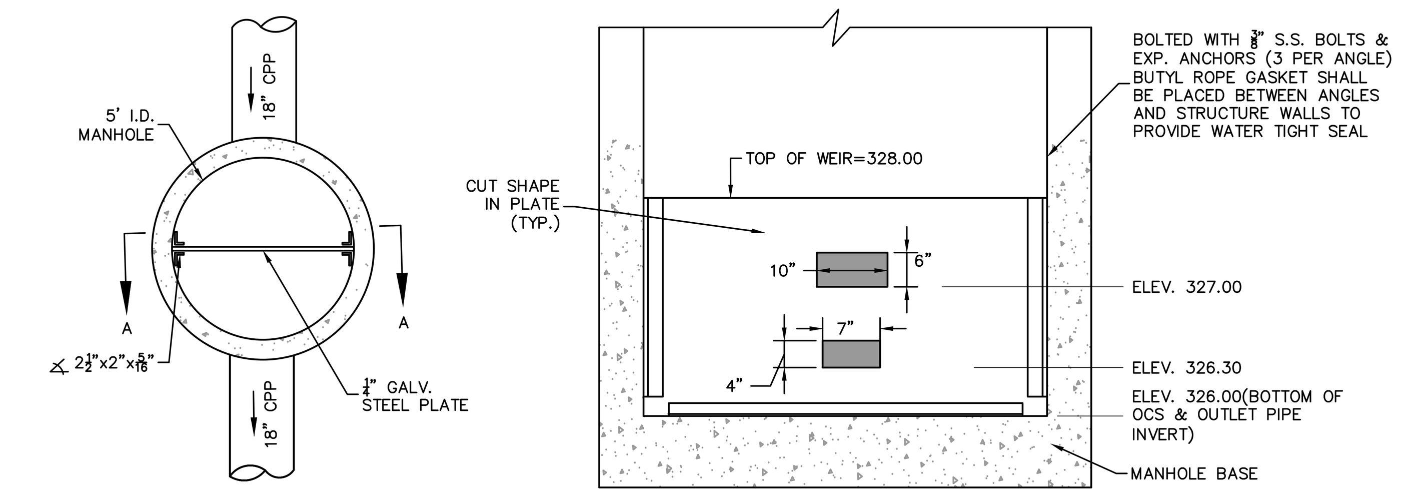



## BIORETENTION BASIN
NOT TO SCALE

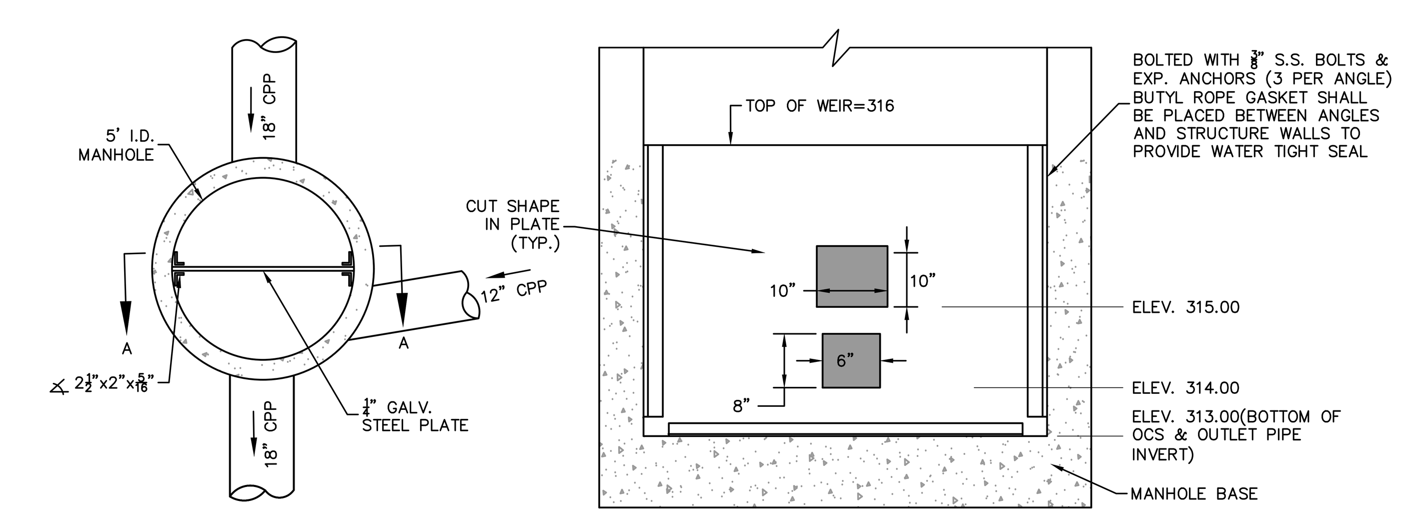



NOTE:
RIP RAP SHALL BE DUMPED AND MACHINE-GRADED (HAND-GRADE AS NEEDED)

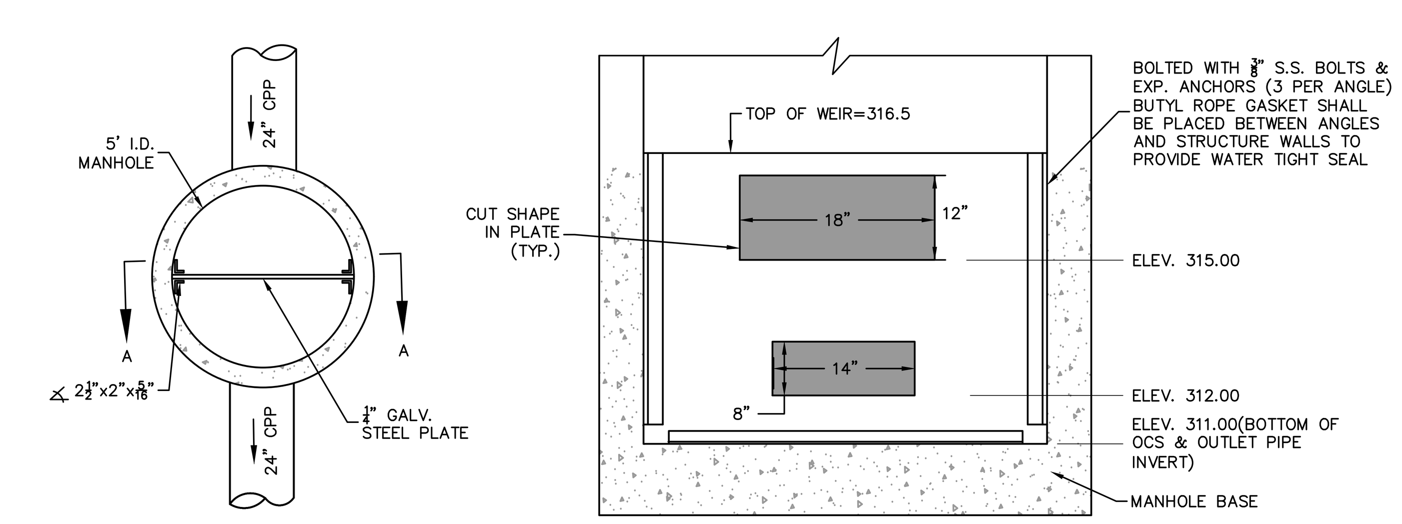
## RIP RAP DETAIL
NOT TO SCALE



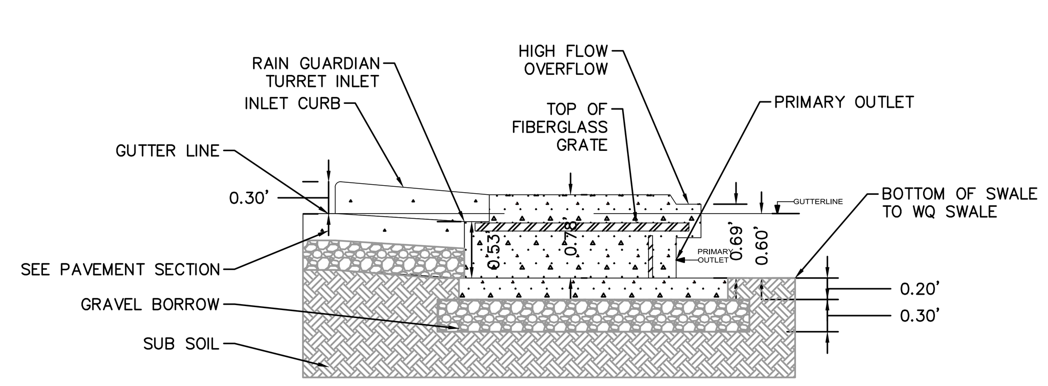

## UDS#4 OUTLET CONTROL STRUCTURE
NOT TO SCALE



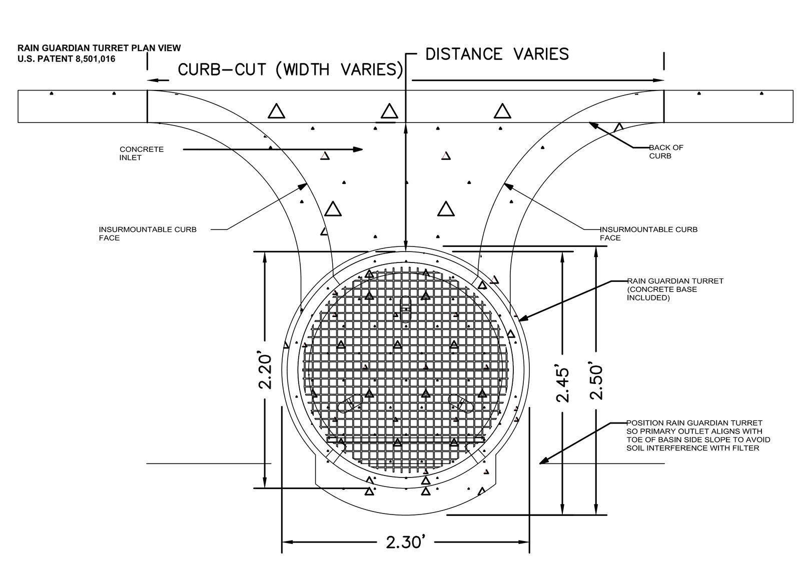

## UDS#2 OUTLET CONTROL STRUCTURE
NOT TO SCALE



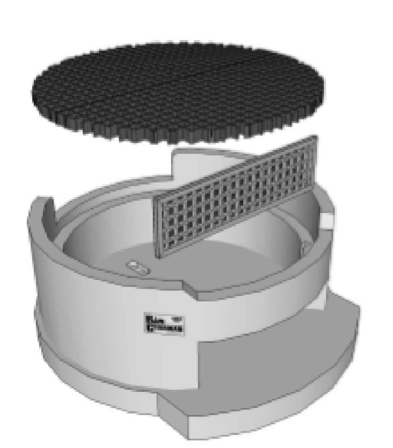

## UDS#3 OUTLET CONTROL STRUCTURE
NOT TO SCALE




## INLET TO SWALE SECTION
NOT TO SCALE

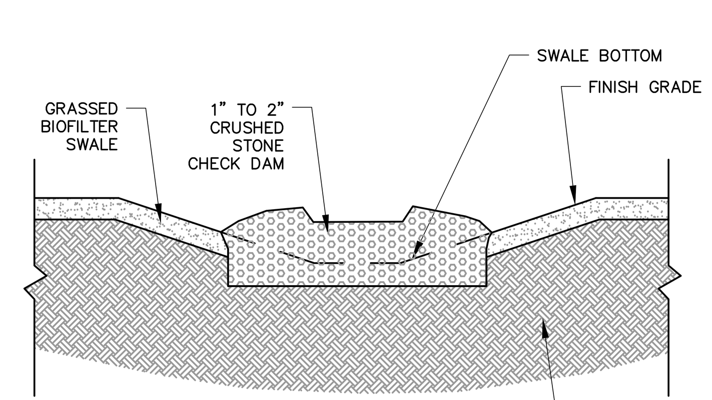



## INLET TO SWALE
NOT TO SCALE



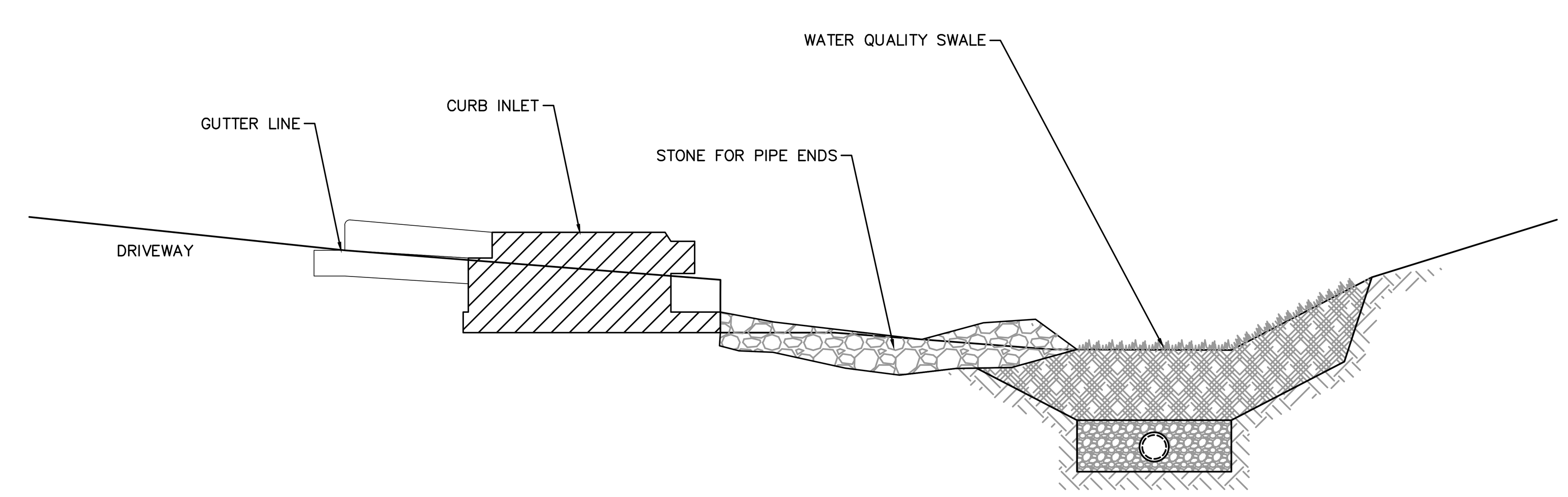
## RAIN GUARDIAN RAIN TURRET
NOT TO SCALE

NOTES:
1. SEE PLAN FOR LOCATION OF CHECK DAMS.
2. CHECK DAM SHALL A MINIMUM OF 12" IN DEPTH AND MIN 6" FROM BOTTOM OF SWALE
3. MINIMUM WITH SHALL BE 12" AT TOP OF CHECK DAM AND 2:1 SLOPES DOWN TO BOTTOM OF SWALE



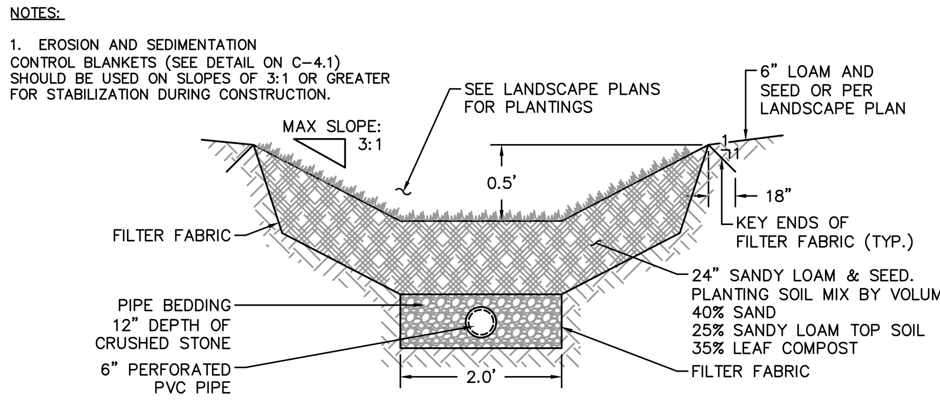

PROFILE

## CHECK DAM FOR WATER QUALITY SWALE
NOT TO SCALE




## TYPICAL INLET TO WATER QUALITY SWALE SECTION
NOT TO SCALE

NOTES:
1. EROSION AND SEDIMENTATION CONTROL BLANKETS (SEE DETAIL ON C-4.1) SHOULD BE USED ON SLOPES OF 3:1 OR GREATER FOR STABILIZATION DURING CONSTRUCTION.




## WATER QUALITY SWALE SECTION
NOT TO SCALE

WATER QUALITY SWALE

Nitsch Engineering
www.nitscheng.com
120 Front Street, Suite 820
Worcester, MA 01608
T: (508) 365-1030
F: (617) 338-6472

► Civil Engineering
► Land Surveying
► Transportation Engineering
► Structural Engineering
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DORE & WHITTIER ARCHITECTS, INC.
ARCHITECTS • PROJECT MANAGERS

Project No. 17-759

W. EDWARD BALMER ELEMENTARY SCHOOL
21 CRESCENT STREET
WHITINSVILLE, MA 01588

NITSCH PROJECT #12260
SANDRA A. BROCK CIVIL No. 39417

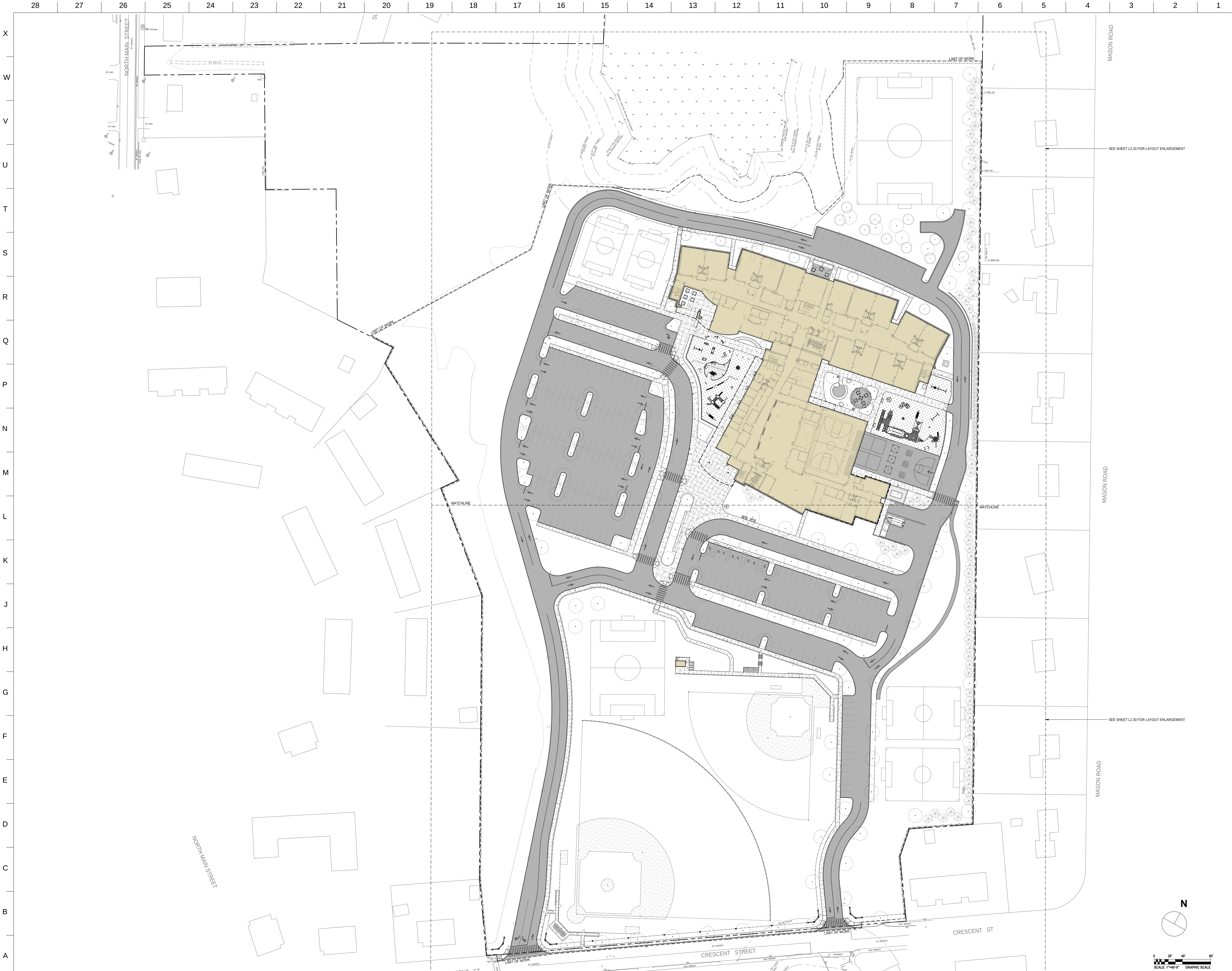
Planning Board Submission

| REVISION: | Date: |
|---|---|
| | |

DATE: 04/09/2019
SCALE: As indicated

SHEET TITLE: SITE DRAINAGE DETAILS

SHEET #: C7.04




# W. EDWARD BALMER ELEMENTARY SCHOOL

21 CRESCENT STREET
WHITINSVILLE, MA 01588


HORIUCHI SOLIEN INC.
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Project No. 17-759



**Planning Board Submission**

| REVISION: | Date: |
|---|---|
| | |

DATE: 04/09/2019
SCALE: 1"=40'-0"

SHEET TITLE: OVERALL SITE PLAN

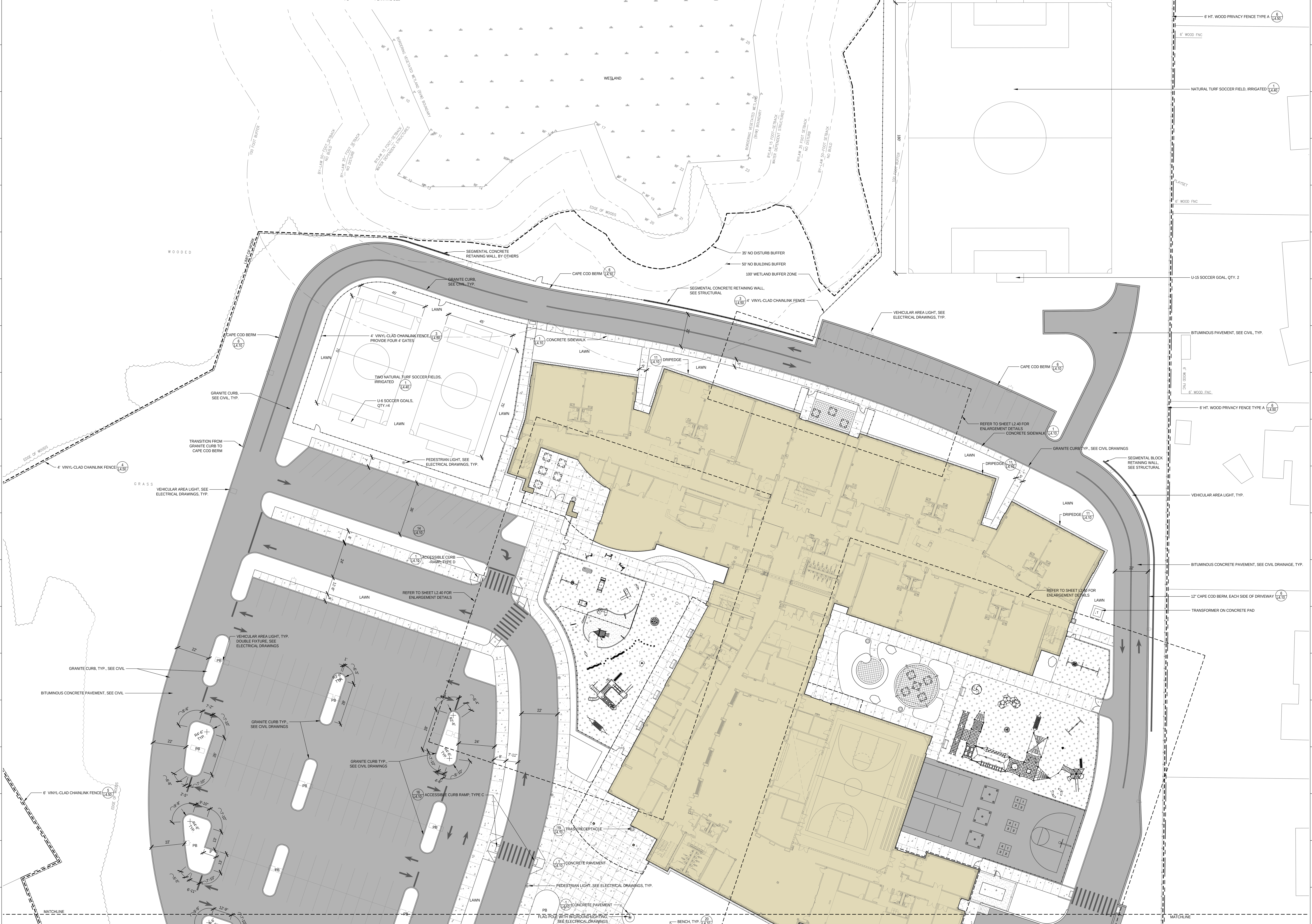
SHEET #: **L2.10**

## LAYOUT AND MATERIALS LEGEND

- BITUMINOUS PAVING (BY CIVIL)
- CONCRETE TYPE A - 4"
- CONCRETE TYPE B - 6"
- CONCRETE UNIT PAVERS
- RUBBER PLAY SURFACING
- THICKENED RUBBER PLAY SURFACING
- INFIELD MIX
- CRUSHED STONE DRIPEDGE WITH STEEL EDGING
- BICYCLE RACK
- CHAIN LINK FENCING
- ORNAMENTAL FENCING
- WOOD FENCING
- BENCH
- TRASH RECEPTACLE
- PEDESTRIAN AREA LIGHT
- VEHICULAR AREA LIGHT
- PB PLANTING BED

LAYOUT NOTES

1. ALL PAVEMENTS SHALL BE STAKED BY THE CONTRACTOR FOR APPROVAL BY THE LANDSCAPE ARCHITECT BEFORE CONSTRUCTION BEGINS. THE CONTRACTOR SHALL VERIFY THE LAYOUT OF ALL OTHER SITE ELEMENTS AND REPORT DISCREPANCIES TO THE LANDSCAPE ARCHITECT.
2. AT ALL LOCATIONS WHERE ROADWAY OR SIDEWALK PAVEMENT ABUTS NEW CONSTRUCTION, THE EDGE OF EXISTING PAVEMENT SHALL BE SAW CUT TO A SMOOTH EDGE.
3. ALL LINES AND DIMENSIONS ARE PARALLEL, PERPENDICULAR, OR RADIAL TO THE LINES FROM WHICH THEY ARE MEASURED.
4. ALL DIMENSIONS ARE IN FEET AND TENTHS AND INCHES.

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Planning Board Submission

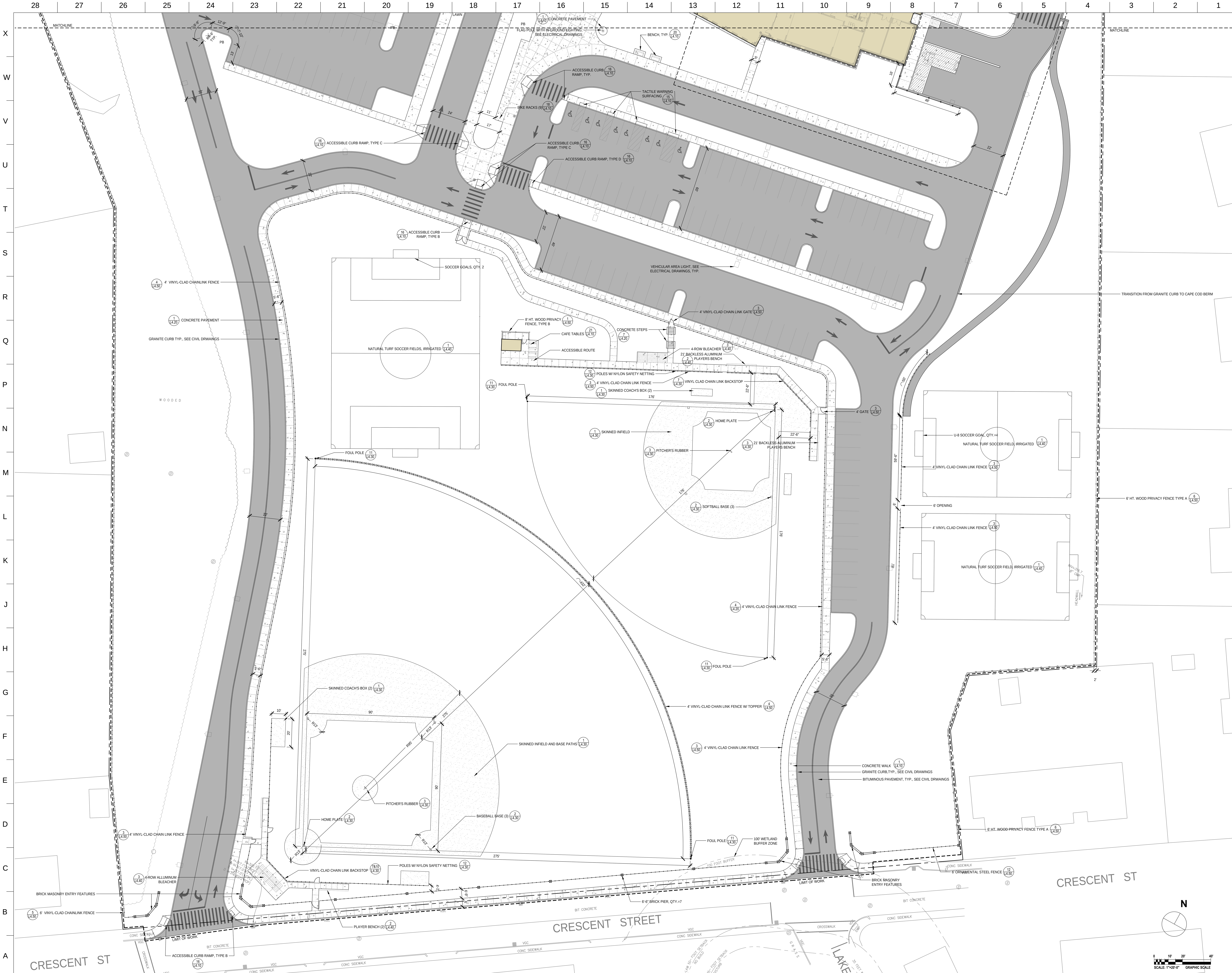
| REVISION: | Date: |
|---|---|
| | |

DATE: 04/09/2019

SCALE: 1"=20'-0"

SHEET TITLE:
LAYOUT AND MATERIALS PLAN

SHEET #:
L2.20

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17-759



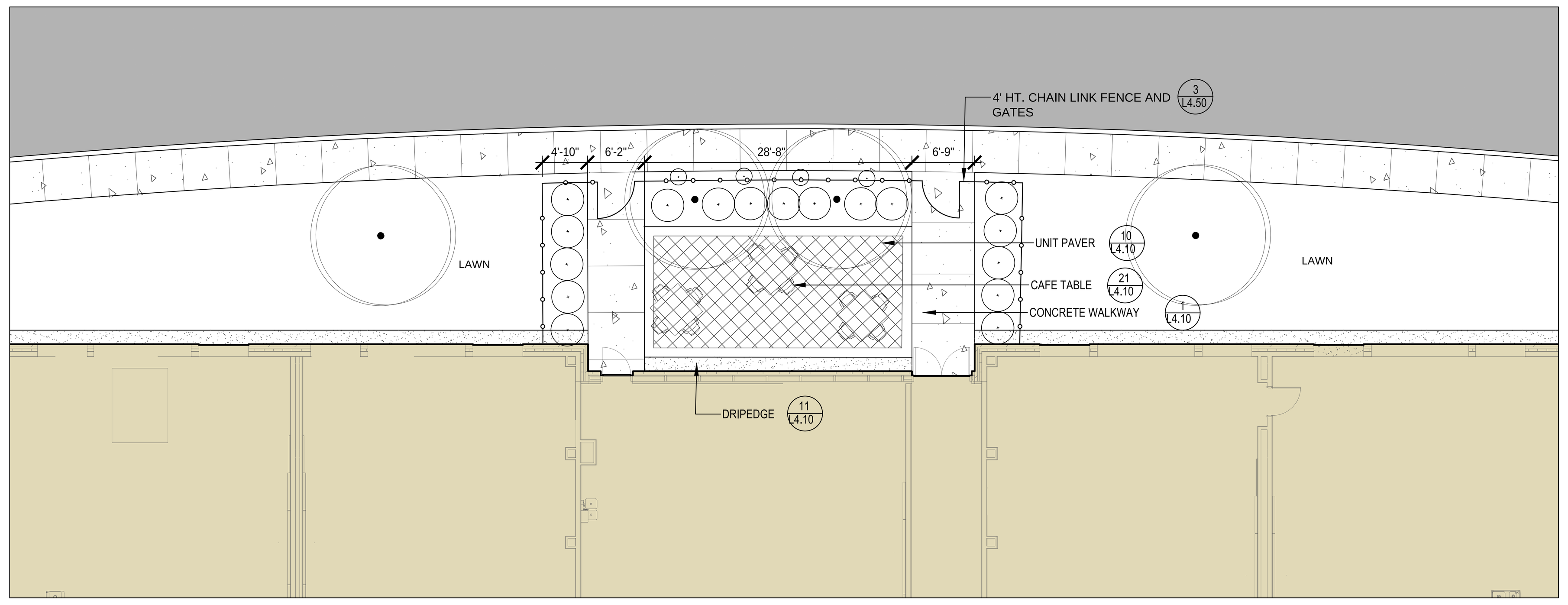
**Planning Board Submission**

| REVISION: | Date: |
|---|---|
| | |

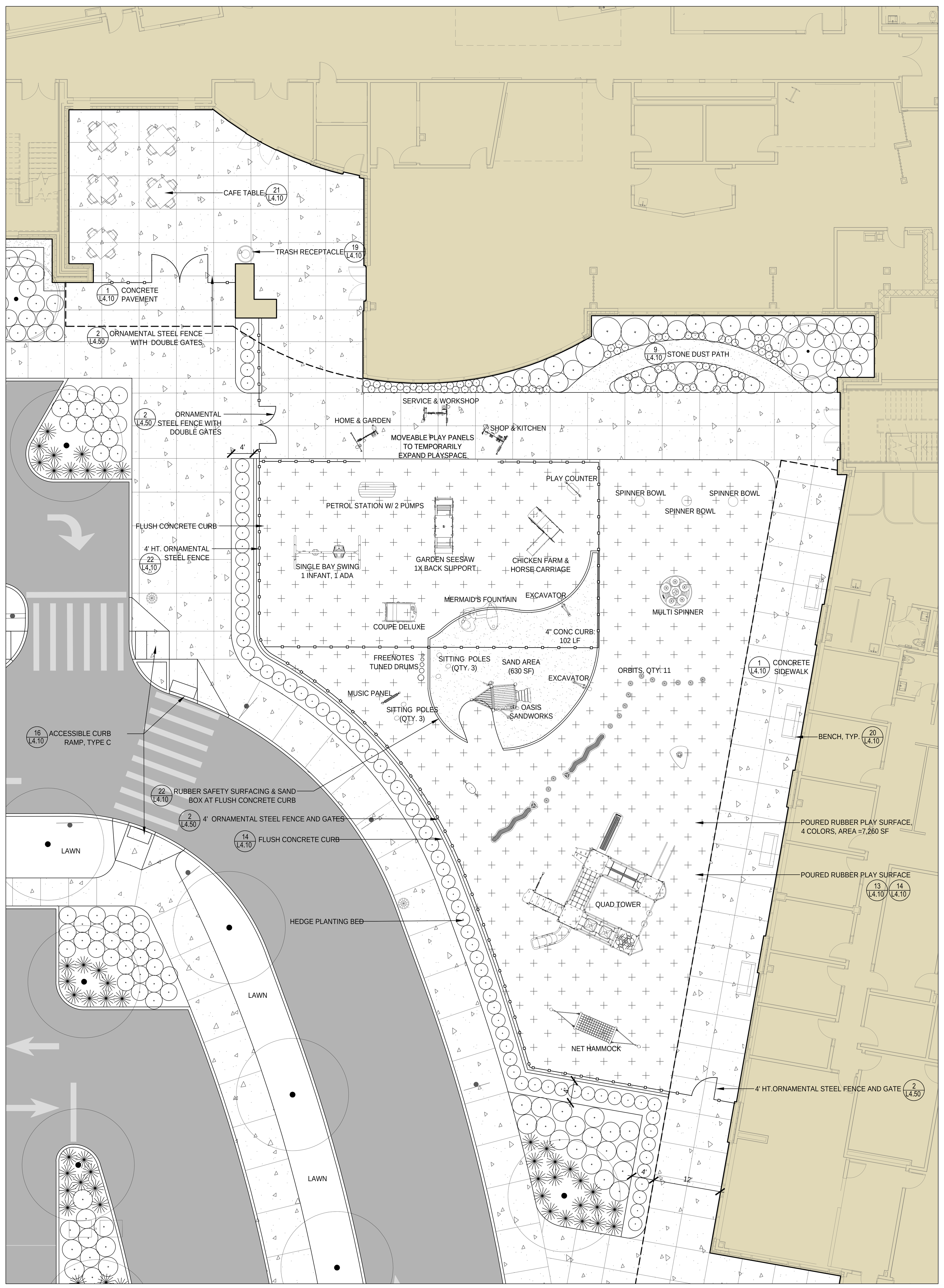
DATE: 04/09/2019
SCALE: 1"=20'-0"

SHEET TITLE:
LAYOUT AND MATERIALS PLAN

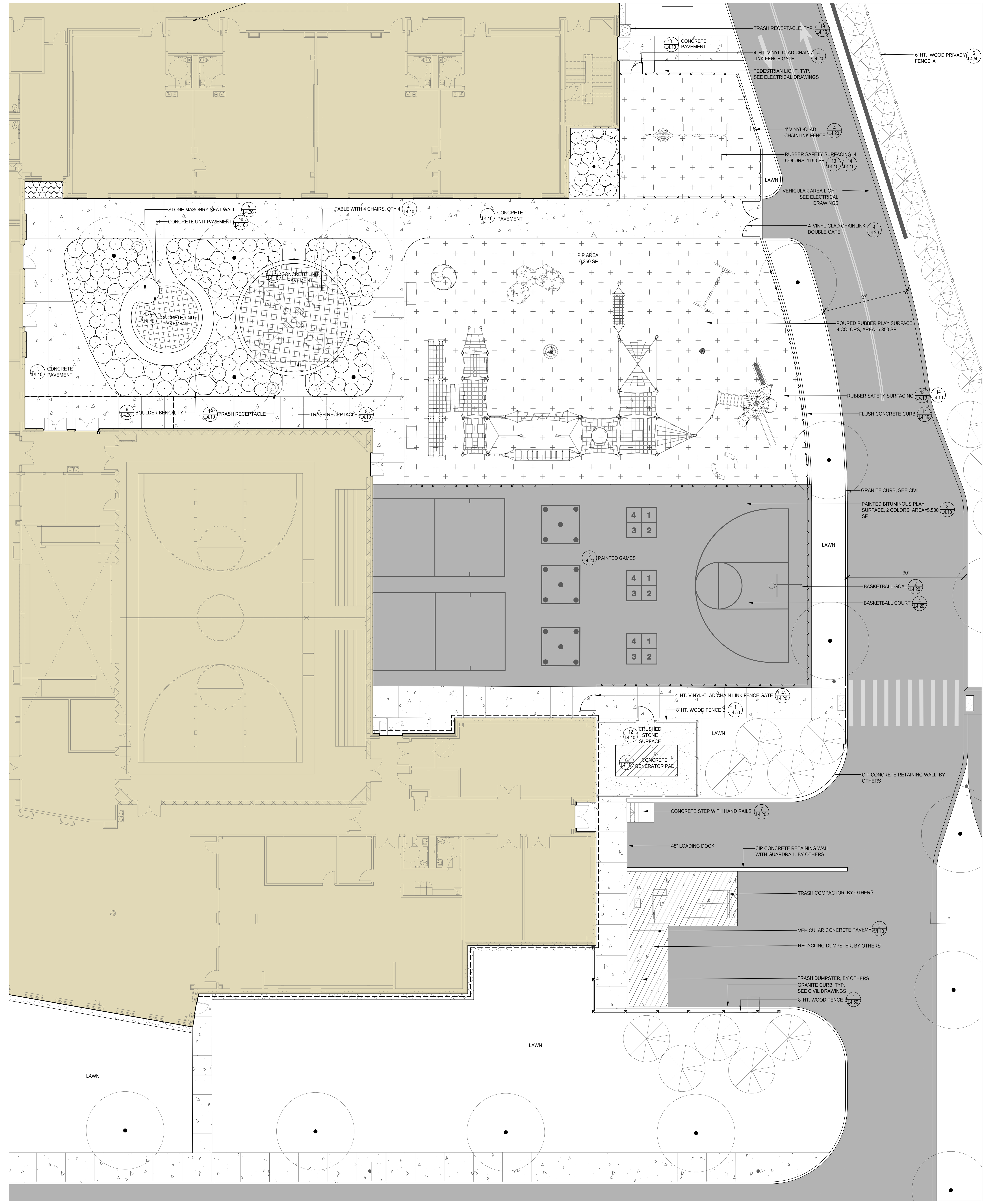
SHEET #:
**L2.30**




1 OUTDOOR PATIO ENLARGEMENT
1"=10'-0"




2 PRE-K - GRADE 2 PLAYGROUND ENLARGEMENT
1"=10'-0"




3 GRADES 3-5 PLAYGROUND ENLARGEMENT
1"=10'-0"

N

SCALE: 1"=10'-0" GRAPHIC SCALE

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21 CRESCENT STREET
WHITINSVILLE, MA 01588

Planning Board Submission

| REVISION: | Date: |
| --- | --- |
| | |

DATE: 04/09/2019
SCALE: 1"=10'-0"

SHEET TITLE:
LAYOUT AND MATERIALS ENLARGEMENT PLAN

SHEET #:
L2.40

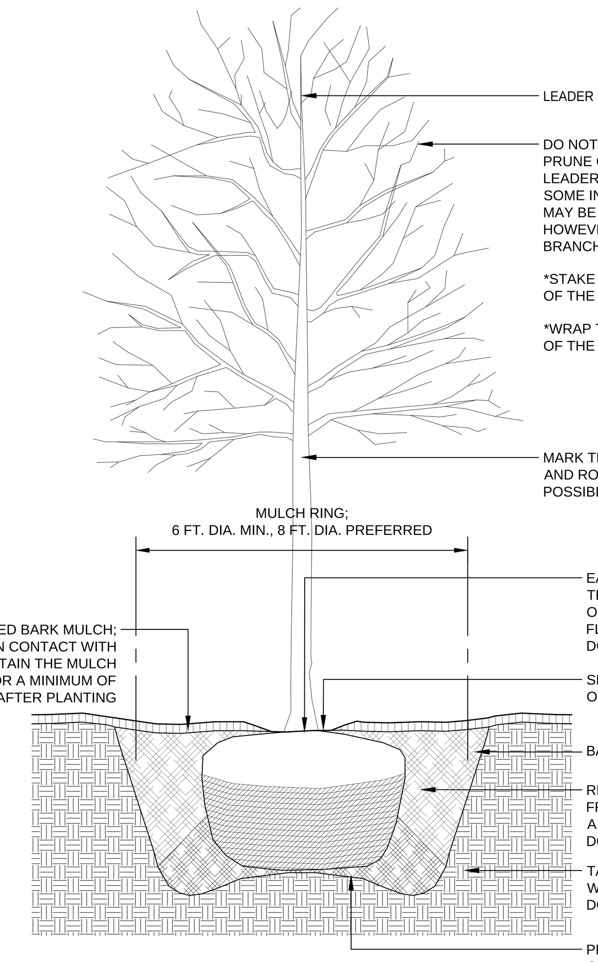
## PLANTING LEGEND

TYPE

- EVERGREEN TREE
- DECIDUOUS TREE
- ORNAMENTAL TREE
- DECIDUOUS SHRUB
- EVERGREEN SHRUB
- PERENNIALS & GROUNDCOVER
- UPLAND SEED MIX
- NATIVE SEED MIX

### PLANT SCHEDULE

| SYM. | BOTANICAL NAME | COMMON NAME | QTY | SIZE | ROOT |
|---|---|---|---|---|---|
| | | | | | |
| | **EVERGREEN TREES** | | | | |
| JV | JUNIPERUS VIRGINIANA 'CORCORCOR' | 'EMERALD SENTINEL' EASTERN RED CEDAR | 30 | 7' - 8' HT. | B&B |
| PG | PICEA GLAUCA | WHITE SPRUCE | 71 | 10' - 12' HT. | B&B |
| TG | THUJA 'GREEN GIANT' | 'GREEN GIANT' ARBORVITAE | 13 | 10' - 12' HT. | B&B |
| | | | | | |
| | **DECIDUOUS TREES** | | | | |
| AR | ACER RUBRUM 'OCTOBER GLORY' | 'OCTOBER GLORY' RED MAPLE | 47 | 3" - 3.5" CAL. | B&B |
| GB | GINKGO BILOBA 'AUTUMN GOLD' | 'AUTUMN GOLD' MAIDENHAIR TREE | 3 | 2.5" - 3" CAL. | B&B |
| GT | GLEDITSIA TR. INERMIS 'SHADEMASTER' | 'SHADEMASTER' THORNLESS HONEYLOCUST | 70 | 3" - 3.5" CAL. | B&B |
| | | | | | |
| | **ORNAMENTAL TREES** | | | | |
| AL | AMELANCHIER LAEVIS | ALLEGHENY SERVICEBERRY | 8 | 7' - 8' CLUMP | B&B |
| AP | ACER PALMATUM | JAPANESE MAPLE - UPRIGHT GREEN | 2 | 2" - 2.5" CAL. | B&B |
| HM | HEPTACODIUM MICONIOIDES | SEVEN SON FLOWER | 1 | 7' - 8' CLUMP | B&B |
| HX | HAMAMELIS X 'ARNOLD PROMISE' | 'ARNOLD PROMISE' WITCH HAZEL | 1 | 25 GAL. | CONT. |
| MD | MALUS 'DONALD WYMAN' | 'DONALD WYMAN' CRABAPPLE | 10 | 1.5" - 2" CAL. | B&B |
| MS | MALUS 'SUTZYAM' | 'SUGAR TYME' CRABAPPLE | 1 | 1.5" - 2" CAL. | B&B |
| | | | | | |
| | **DECIDUOUS SHRUBS** | | | | |
| AX | ABELIA X GRANDIFLORA 'ROSE CREEK' | 'ROSE CREEK' COMPACT ABELIA | 68 | 3 GAL. | CONT. |
| FA | FORSYTHIA 'ARNOLD DWARF' | 'ARNOLD DWARF' FORSYTHIA | 50 | 3 GAL. | CONT. |
| IV | ILEX VERTICILLATA 'BERRY POPPINS' | 'BERRY POPPINS' DWARF WINTERBERRY | 6 | 3 GAL. | CONT. |
| IVm | ILEX VERTICILLATA 'MR. POPPINS' | 'MR. POPPINS' DWARF MALE WINTERBERRY (POLLINATOR) | 2 | 3 GAL. | CONT. |
| LO | LIGUSTRUM OVALIFOLIUM | CALIFORNIA PRIVET | 78 | 7 GAL. | CONT. |
| RA | RHUS AROMATICA 'GRO-LOW' | 'GRO-LOW FRAGRANT SUMAC | 162 | 2 GAL. | CONT. |
| SP | SYRINGA PATULA 'MISS KIM' | 'MISS KIM' COMPACT LILAC | 11 | 5 GAL. | CONT. |
| VT | VIBURNUM TRILOBUM 'BAILEY COMPACT' | 'BAILEY COMPACT' CRANBERRYBUSH VIBURNUM | 22 | 5 GAL. | CONT. |
| | | | | | |
| | **EVERGREEN SHRUBS** | | | | |
| IG | ILEX GLABRA 'SHAMROCK' | 'SHAMROCK' COMPACT INKBERRY | 178 | 5 GAL. | CONT. |
| JB | JUNIPERUS CONFERTA 'BLUE PACIFIC' | 'BLUE PACIFIC' SHORE JUNIPER | 402 | 3 GAL. | CONT. |
| JC | JUNIPERUS CHINENSIS 'SARGENTII' | 'GREEN SARGENT' JUNIPER | 18 | 3 GAL. | CONT. |
| | | | | | |
| | **PERENNIALS, GROUNDCOVER & VINES** | | | | |
| AB | AMSONIA 'BLUE ICE' | 'BLUE ICE' COMPACT BLUESTAR | 68 | 1 GAL. | CONT. |
| DP | DENNSTAEDTIA PUNCTLOBULA | HAY-SCENTED FERN | 18 | 1 GAL. | CONT. |
| LS | LONICERA SEMPERVIRENS | NATIVE TRUMPET HONEYSUCKLE | 4 | 2 GAL. STK. | CONT. |




1 TREE PLANTING

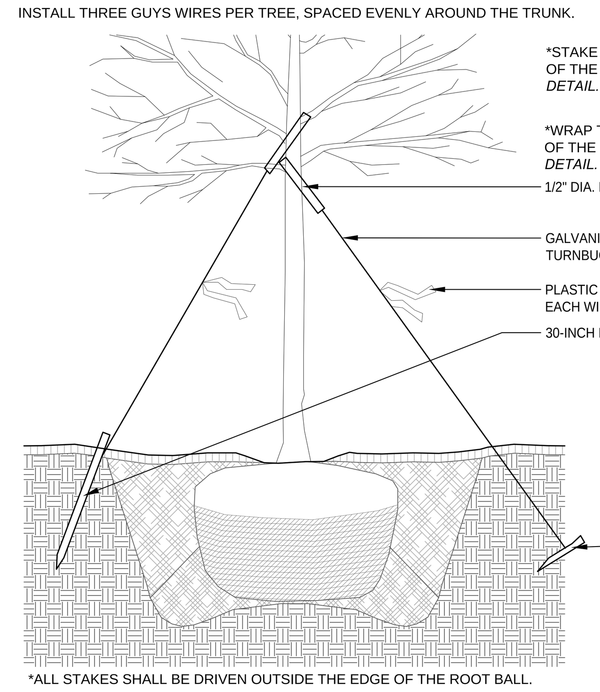
1/2"=1'-0"

*WIRE OR CABLE SIZES SHALL BE AS FOLLOWS:
TREES UP TO 2.5" CALIPER - 14 GAUGE
TREES 2.5" TO 3" CALIPER - 12 GAUGE

TIGHTEN WIRE OR CABLE ONLY ENOUGH TO KEEP FROM SLIPPING. ALLOW FOR SOME TRUNK MOVEMENT. PLASTIC HOSE SHALL BE LONG ENOUGH TO ACCOMANDATE 1.5" OF GROWTH AND BUFFER ALL BRANCHES FROM THE WIRE.

TUCK ANY LOOSE ENDS OF THE WIRE OR CABLE INTO THE WIRE WRAP SO THAT NO SHARP WIRE ENDS ARE EXPOSED.

INSTALL THREE GUYS WIRES PER TREE, SPACED EVENLY AROUND THE TRUNK.



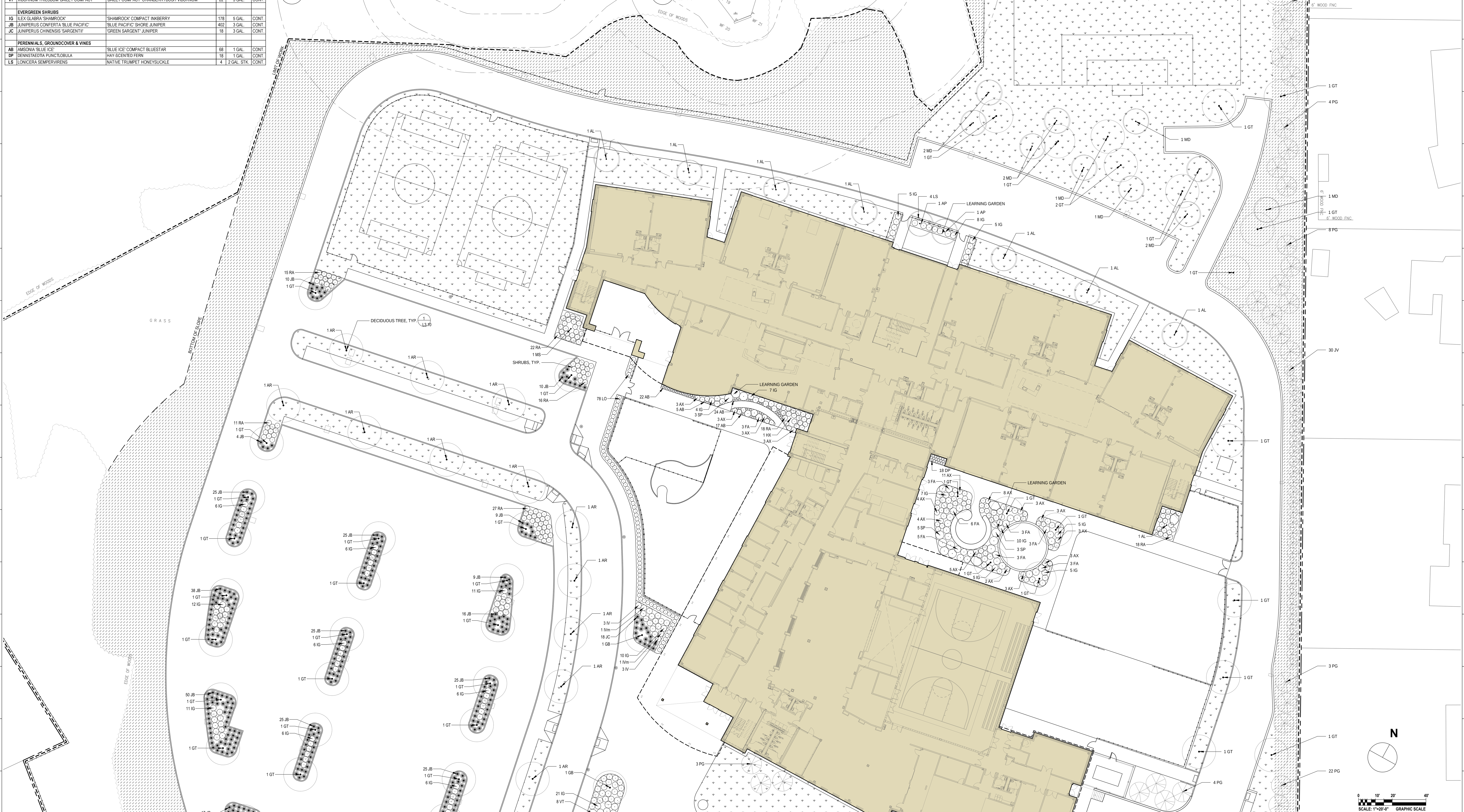

*ALL STAKES SHALL BE DRIVEN OUTSIDE THE EDGE OF THE ROOT BALL.

ASSURE THAT THE BEARING SURFACE OF THE PROTECTIVE COVERING OF THE WIRE OR CABLE AGAINST THE TREE TRUNK IS A MINIMUM OF 1/2".

REMOVE ALL STAKING AS SOON AS THE TREE HAS GROWN SUFFICENT ROOTS TO OVERCOME THE PROBLEM THAT REQUIRED THE TREE TO BE STAKED. STAKES SHALL BE REMOVED NO LATER THAN THE END OF THE FIRST GROWING SEASON AFTER PLANTING.

2 TREE STAKING

1/2"=1'-0"





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21 CRESCENT STREET
WHITINSVILLE, MA 01588



**Planning Board Submission**

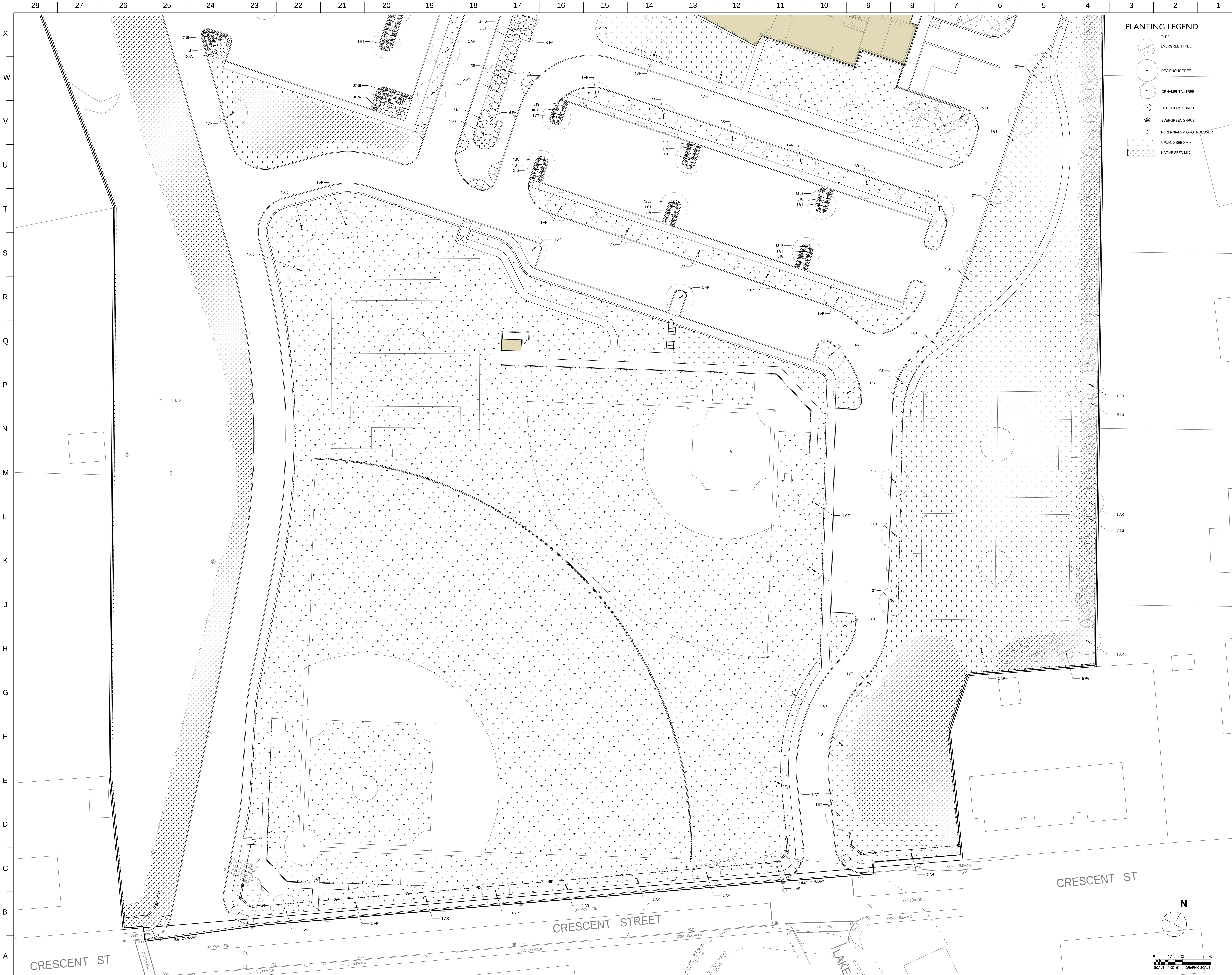
| REVISION: | Date: |
|---|---|
| | |

DATE: 04/09/2019

SCALE: 1"=20'-0"

SHEET TITLE: PLANTING PLAN

SHEET #: L3.10

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| REVISION: | Date: |
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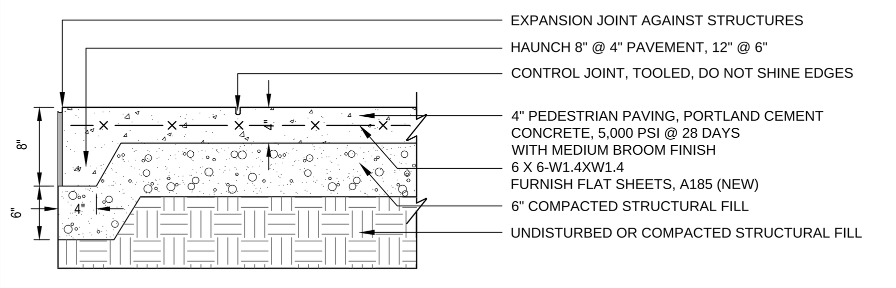
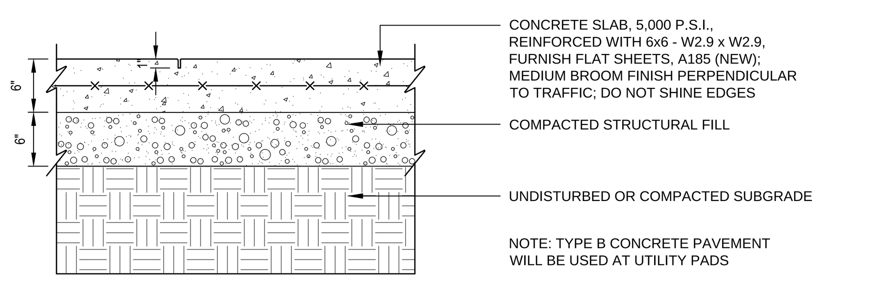
DATE: **04/09/2019**
SCALE: **1"=20'-0"**

SHEET TITLE:
PLANTING PLAN

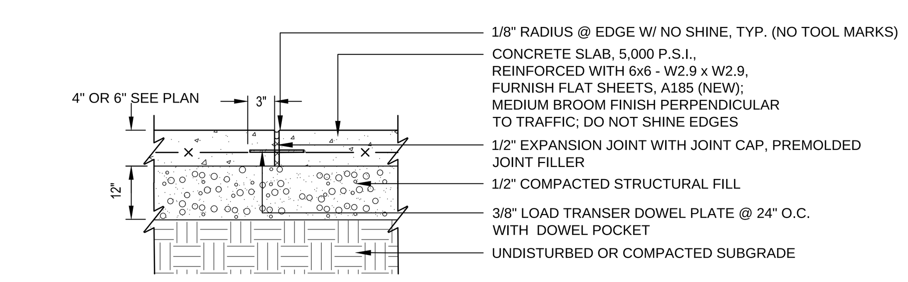
SHEET #:
**L3.20**



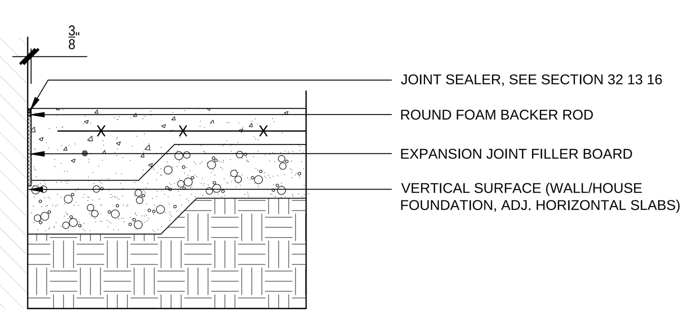

1 PEDESTRIAN CONCRETE PAVEMENT WITH THICKENED EDGE
1"=1'-0"



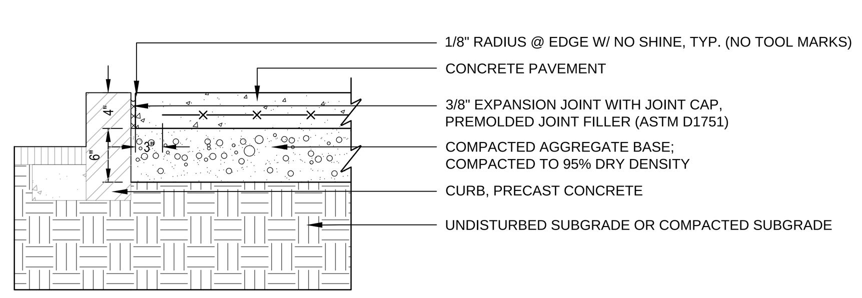

2 VEHICULAR CONCRETE PAVEMENT
1"=1'-0"



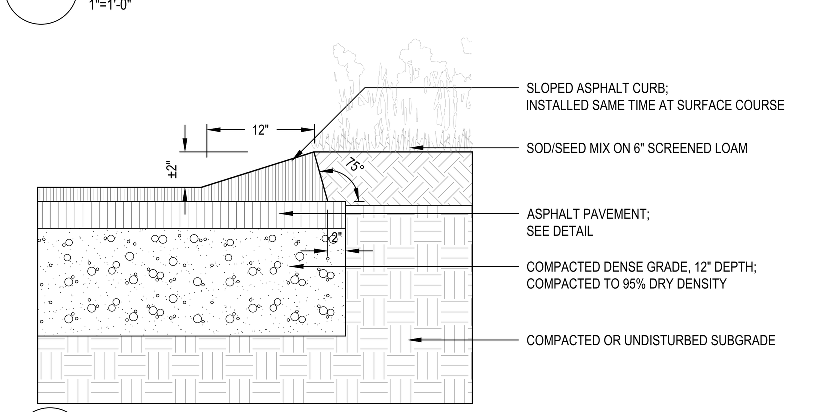

3 DOWELED EXPANSION JOINT AT CONCRETE PAVEMENT
1"=1'-0"



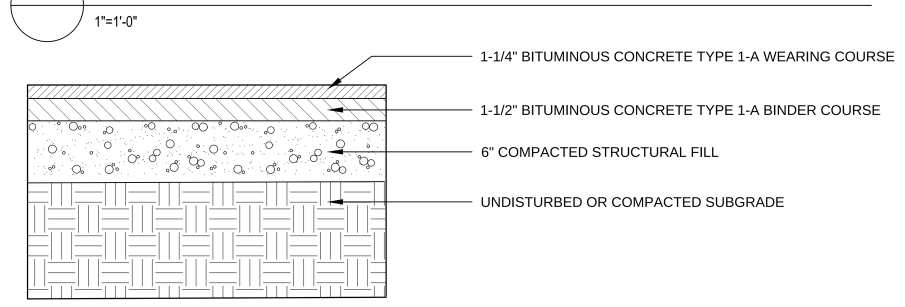

4 PEDESTRIAN CONCRETE EXPANSION JOINT AT VERTICAL SURFACE
1"=1'-0"



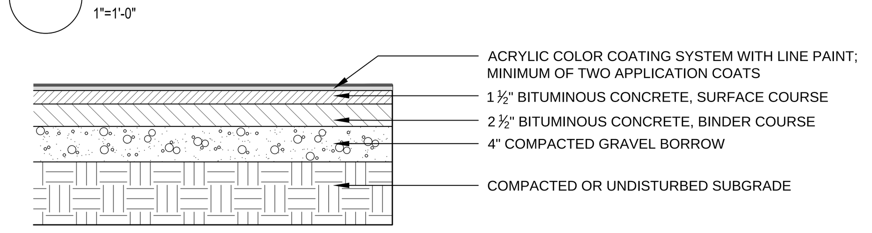

5 EXPANSION JOINT AT VERTICAL GRANITE CURB
1"=1'-0"



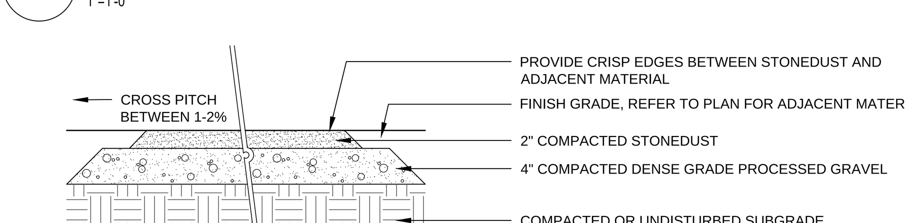

6 BITUMINOUS CAPE COD BERM
1"=1'-0"



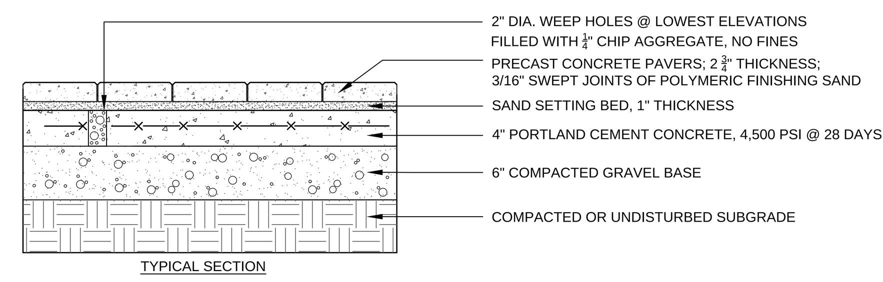

7 PEDESTRIAN BITUMINOUS PAVEMENT
1"=1'-0"



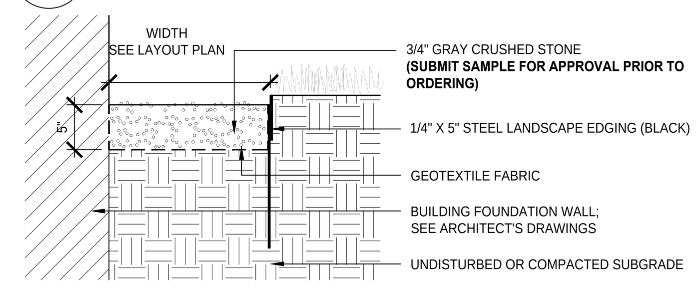

8 BITUMINOUS COURT SURFACING
1"=1'-0"



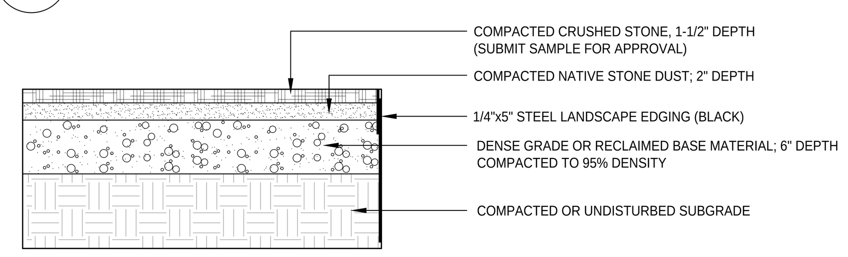

9 STABILIZED STONEDUST SURFACING
1"=1'-0"



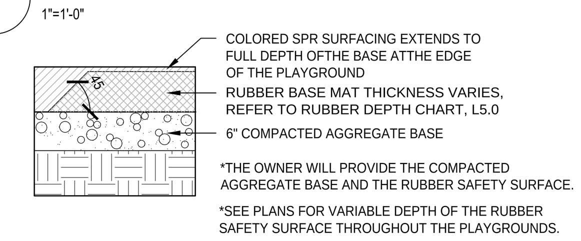

10 UNIT PAVERS
1"=1'-0"



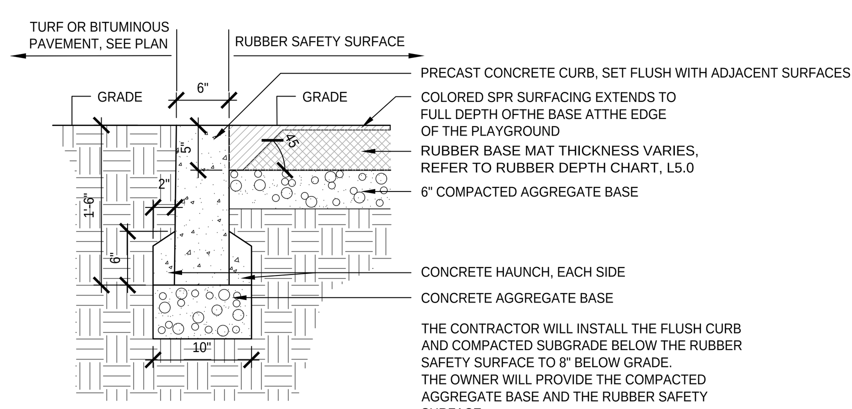

11 CRUSHED STONE DRIPEDGE AT BUILDING
1"=1'-0"



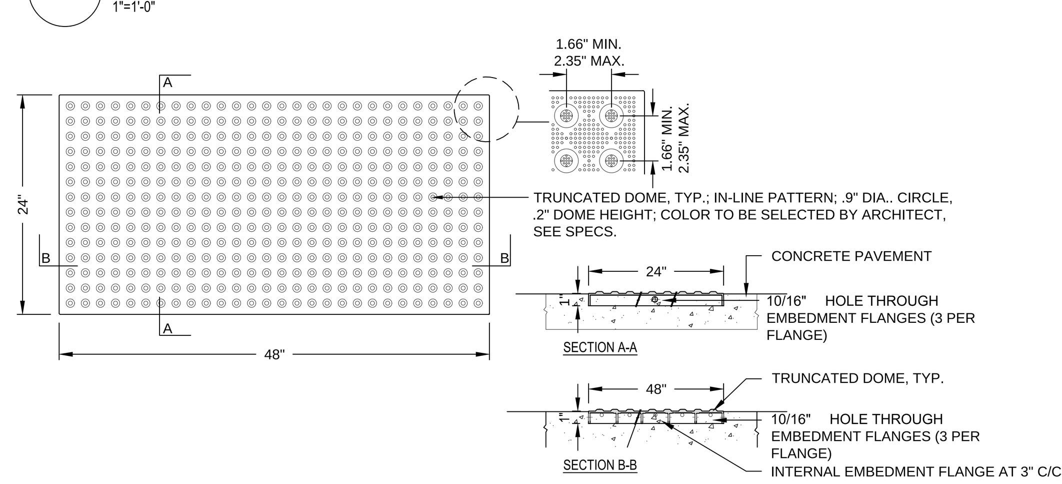

12 CRUSHED STONE
1"=1'-0"



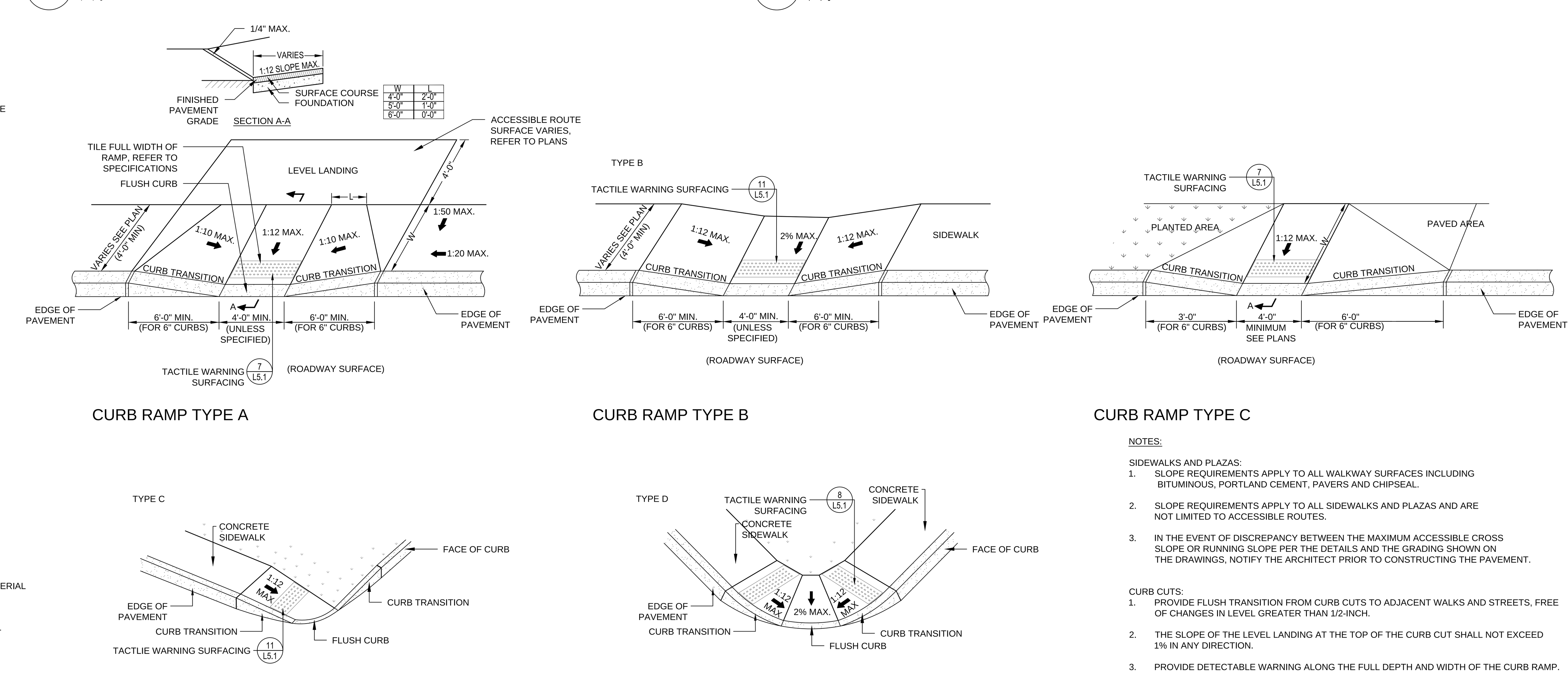

13 RUBBER SAFETY SURFACING
1"=1'-0"




14 RUBBER SAFETY SURFACING AT FLUSH CONCRETE CURB
1"=1'-0"




15 TACTILE WARNING SURFACING
1"=1'-0"



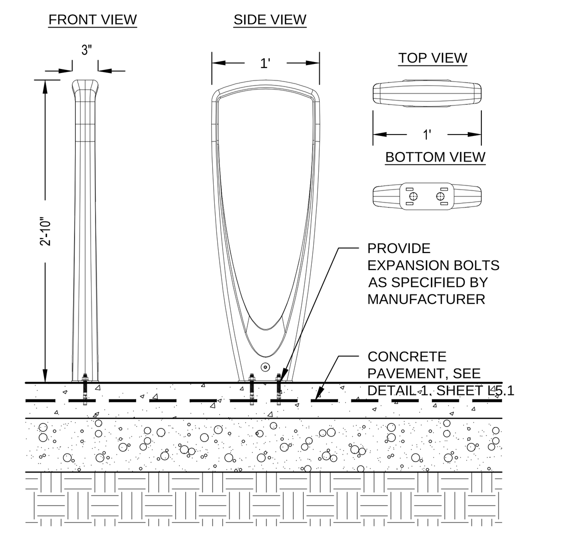

NOTES:

SIDEWALKS AND PLAZAS:
1. SLOPE REQUIREMENTS APPLY TO ALL WALKWAY SURFACES INCLUDING BITUMINOUS, PORTLAND CEMENT, PAVERS AND CHIPSEAL.
2. SLOPE REQUIREMENTS APPLY TO ALL SIDEWALKS AND PLAZAS AND ARE NOT LIMITED TO ACCESSIBLE ROUTES.
3. IN THE EVENT OF DISCREPANCY BETWEEN THE MAXIMUM ACCESSIBLE CROSS SLOPE OR RUNNING SLOPE PER THE DETAILS AND THE GRADING SHOWN ON THE DRAWINGS, NOTIFY THE ARCHITECT PRIOR TO CONSTRUCTING THE PAVEMENT.

CURB CUTS:
1. PROVIDE FLUSH TRANSITION FROM CURB CUTS TO ADJACENT WALKS AND STREETS, FREE OF CHANGES IN LEVEL GREATER THAN 1/2-INCH.
2. THE SLOPE OF THE LEVEL LANDING AT THE TOP OF THE CURB CUT SHALL NOT EXCEED 1% IN ANY DIRECTION.
3. PROVIDE DETECTABLE WARNING ALONG THE FULL DEPTH AND WIDTH OF THE CURB RAMP.
4. ALL CURB CUTS ARE TO BE CONSTRUCTED OUT OF PORTLAND CEMENT CONCRETE UNLESS OTHERWISE NOTED ON PLANS.

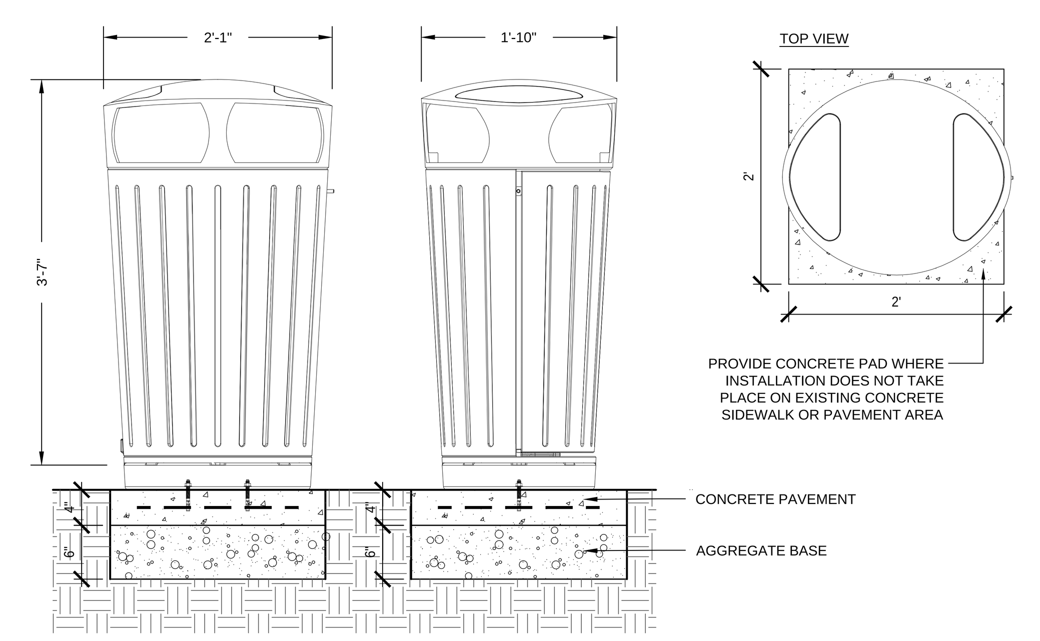
LEVEL LANDINGS:
1. PROVIDE LEVEL LANDINGS WITH MAXIMUM SLOPE IN ANY DIRECTION OF 1%.

16 ACCESSIBLE CURB RAMP
1"=1'-0"



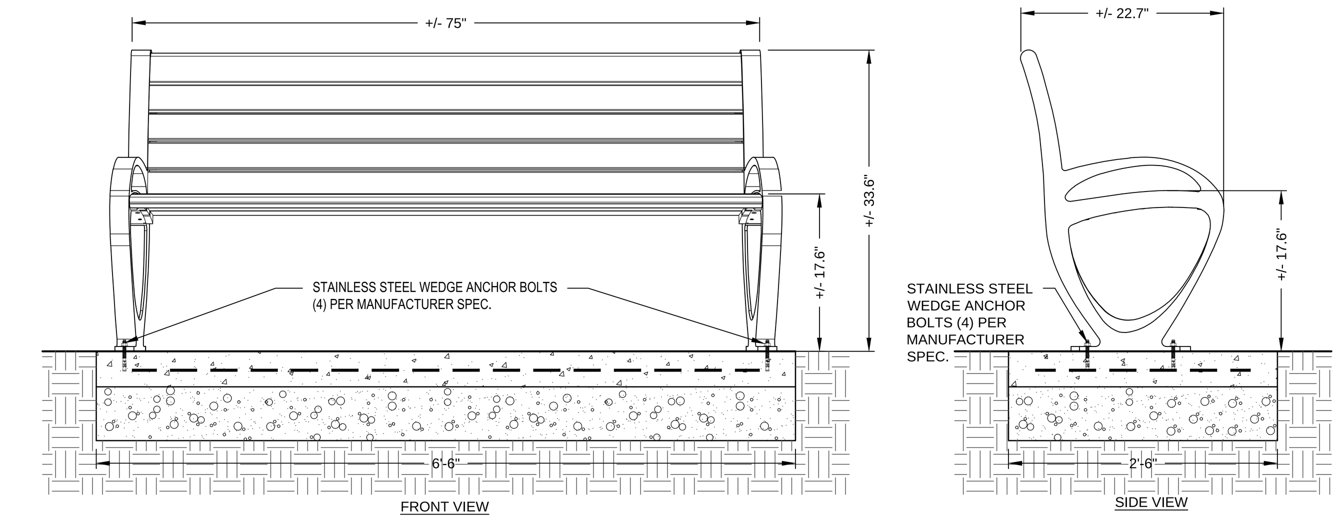

NOTES:
1. PRODUCT MAY VARY FROM THIS ILLUSTRATION. THE CONTRACTOR SHALL INSTALL THE SELECTED BICYCLE RACK IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS FOR A FIXED INSTALLATION.
2. SECURE BICYCLE RACK TO AN EXPANSE OF CONCRETE PAVEMENT (SEE PLAN) IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS.

18 BIKE RACK
1"=1'-0"



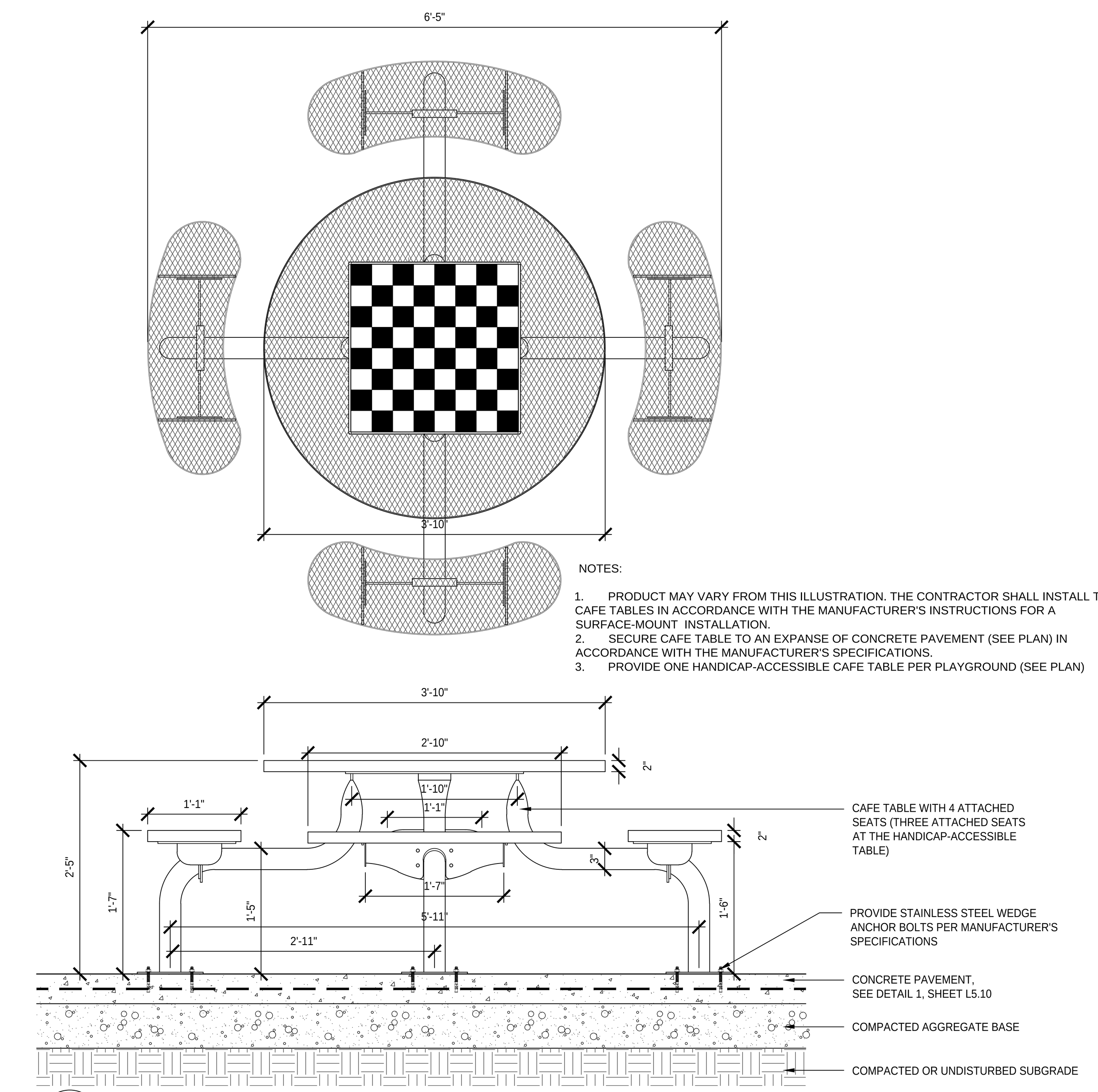

NOTES:
1. PRODUCT MAY VARY FROM THIS ILLUSTRATION. THE CONTRACTOR SHALL INSTALL THE SELECTED TRASH RECEPTACLE IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS FOR A FIXED INSTALLATION.
2. SECURE TRASH RECEPTACLE TO A 24"x24"x4" CONCRETE SLAB OR EXPANSE OF CONCRETE PAVEMENT (SEE PLAN) IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS.

19 TRASH RECEPTACLE
1"=1'-0"



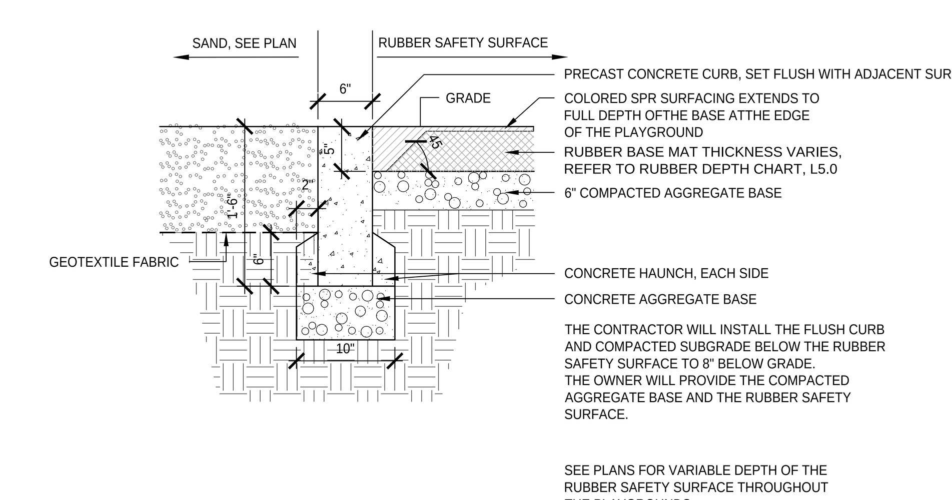

NOTES:
1. SEE SPECIFICATIONS FOR ALTERNATIVE BENCH SELECTIONS.
2. ALL JOINTS SHALL BE FULLY WELDED THROUGHOUT.
3. PROVIDE 30"X76"X4" REINFORCED CONCRETE BASES OVER 4" COMPACTED GRAVEL BASE, WHERE BENCH IS NOT INSTALLED ON EXPANSE OFCONCRETE PAVEMENT.
4. BENCHES WILL BE SECURED TO CONCRETE BASE WITH A 5/8" ANCHOR BOLT IN EACH ANCHOR BOLT HOLE (4), OR IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS.
5. PRODUCT MAY VARY FROM THIS ILLUSTRATION. THE CONTRACTOR SHALL INSTALL THE SELECTED BENCH IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS FOR A FIXED INSTALLATION.

20 BENCH
1"=1'-0"




NOTES:
1. PRODUCT MAY VARY FROM THIS ILLUSTRATION. THE CONTRACTOR SHALL INSTALL THE CAFE TABLES IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS FOR A SURFACE-MOUNT INSTALLATION.
2. SECURE CAFE TABLE TO AN EXPANSE OF CONCRETE PAVEMENT (SEE PLAN) IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS.
3. PROVIDE ONE HANDICAP-ACCESSIBLE CAFE TABLE PER PLAYGROUND (SEE PLAN)

21 CAFE TABLE
1"=1'-0"




22 RUBBER SAFETY SURFACING & SAND BOX AT FLUSH CONCRETE CURB
1"=1'-0"

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ARCHITECTS • PROJECT MANAGERS

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21 CRESCENT STREET
WHITINSVILLE, MA 01588

Planning Board Submission

| REVISION: | Date: |
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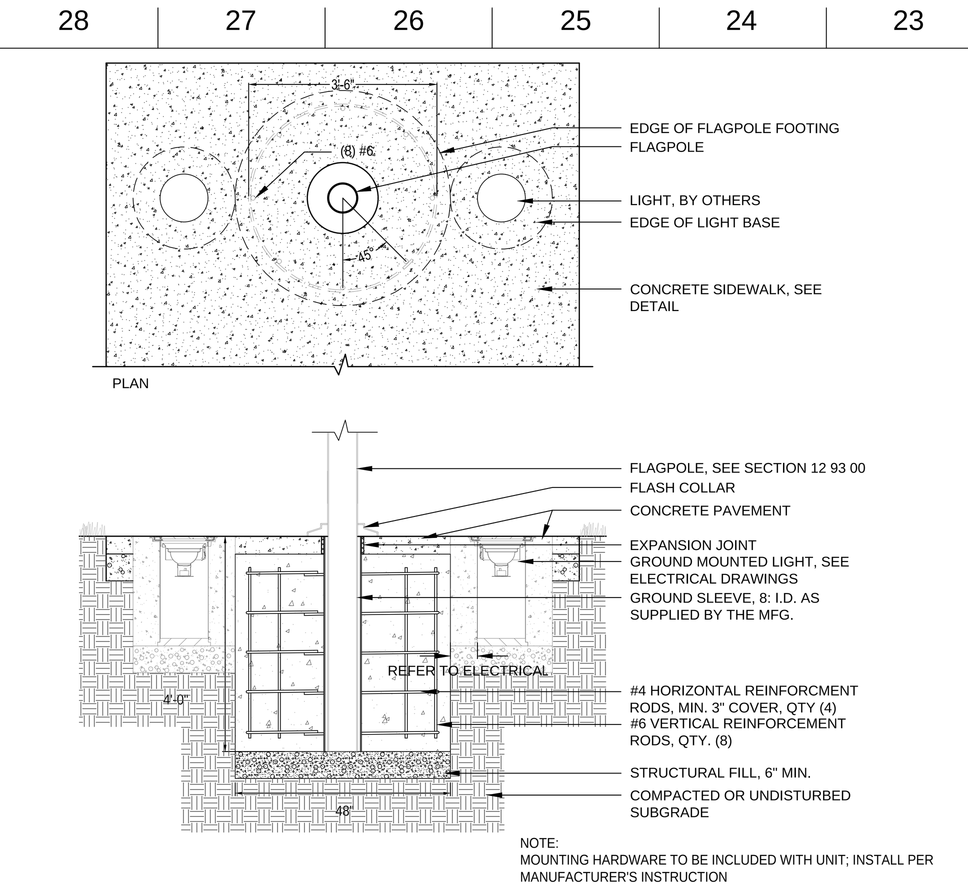
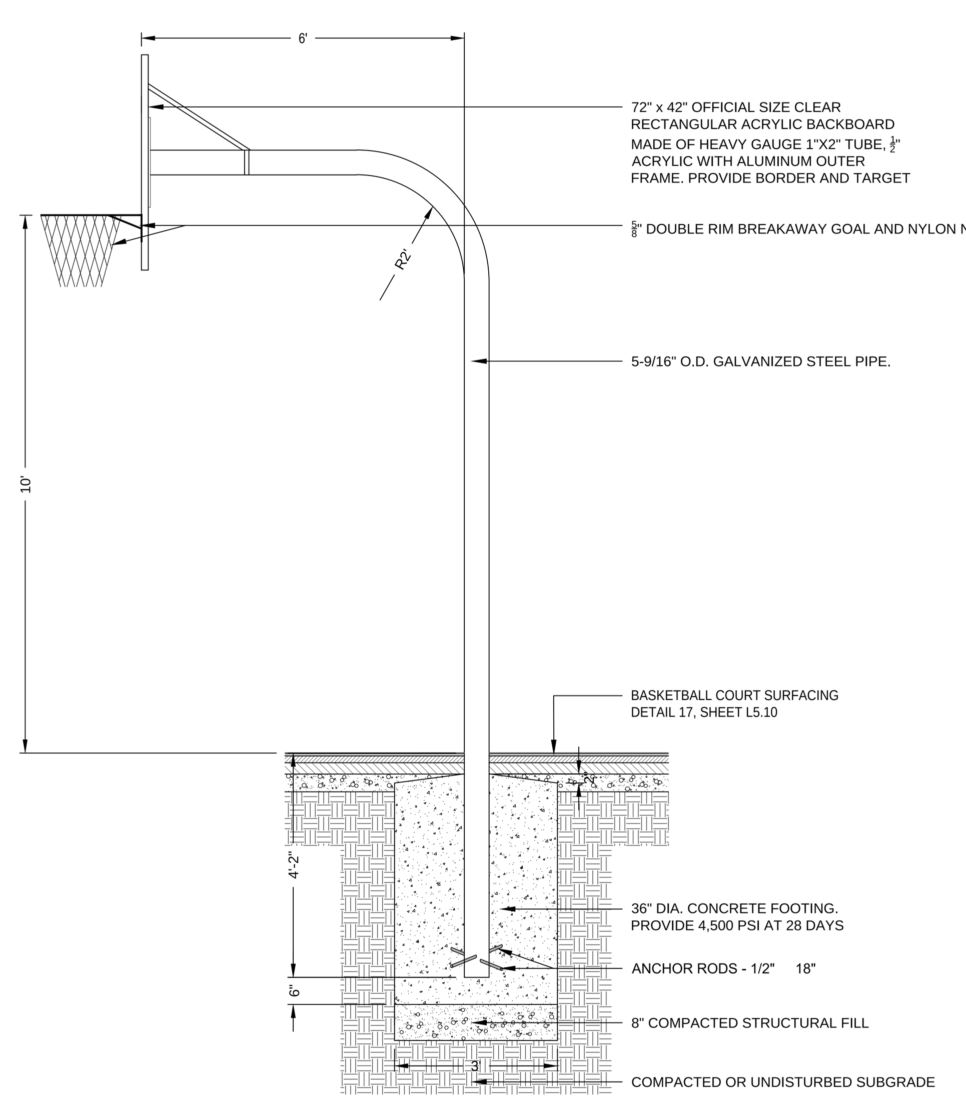
DATE: 04/09/2019
SCALE: AS NOTED

SHEET TITLE: DETAILS

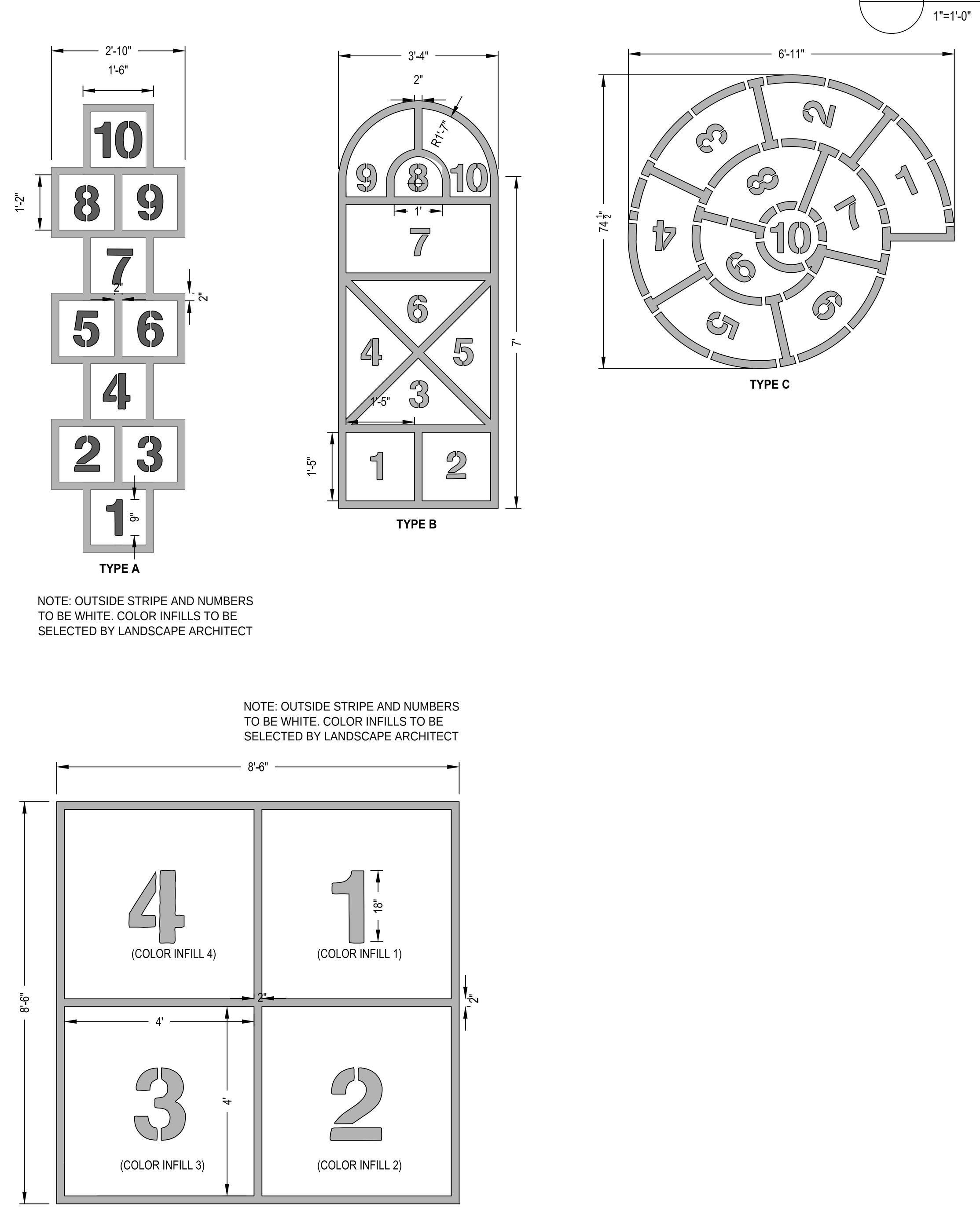
SHEET #: L4.10



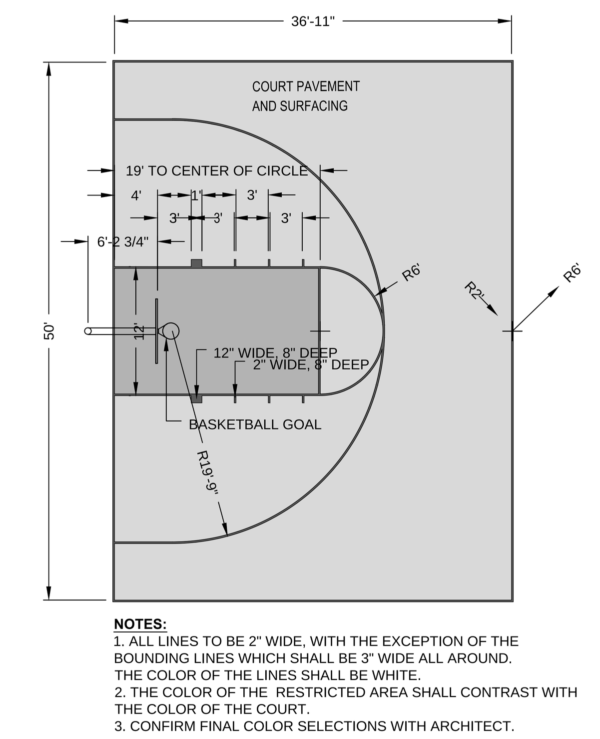

1 FLAGPOLE
1/2"=1'-0"



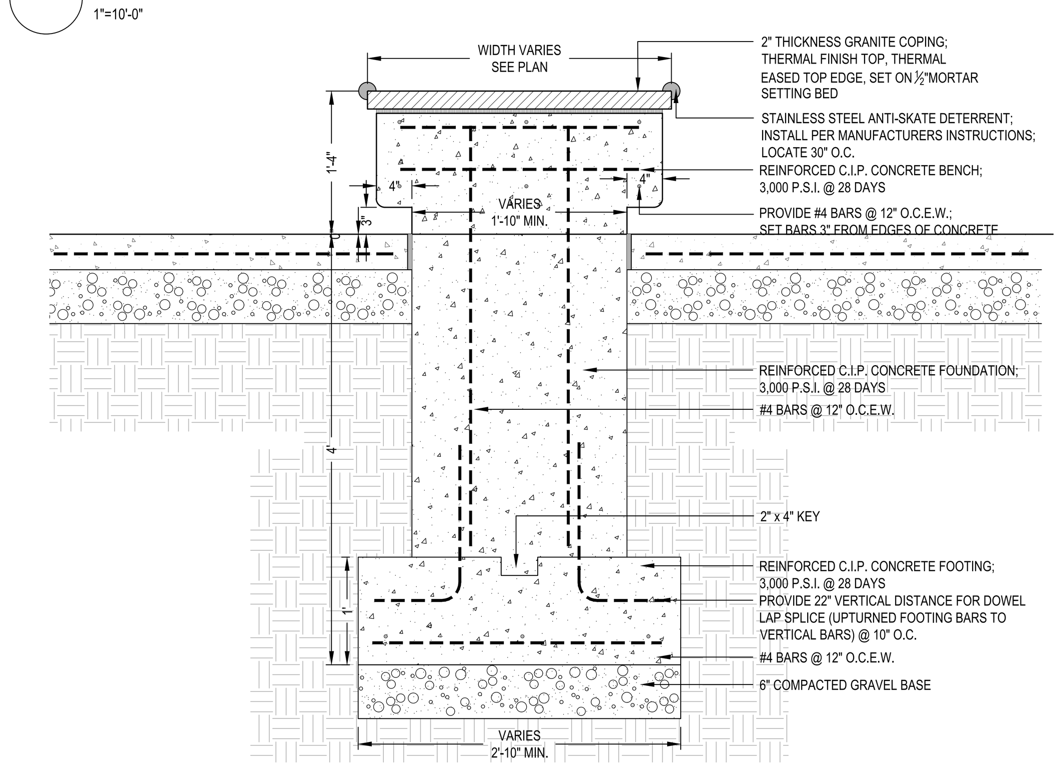

2 BASKETBALL GOAL AND FOOTING
1/2"=1'-0"



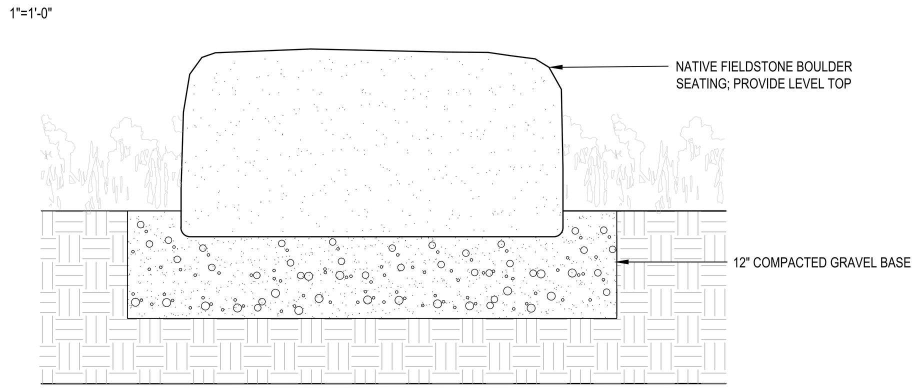

3 PAINTED GAMES
1/2"=1'-0"



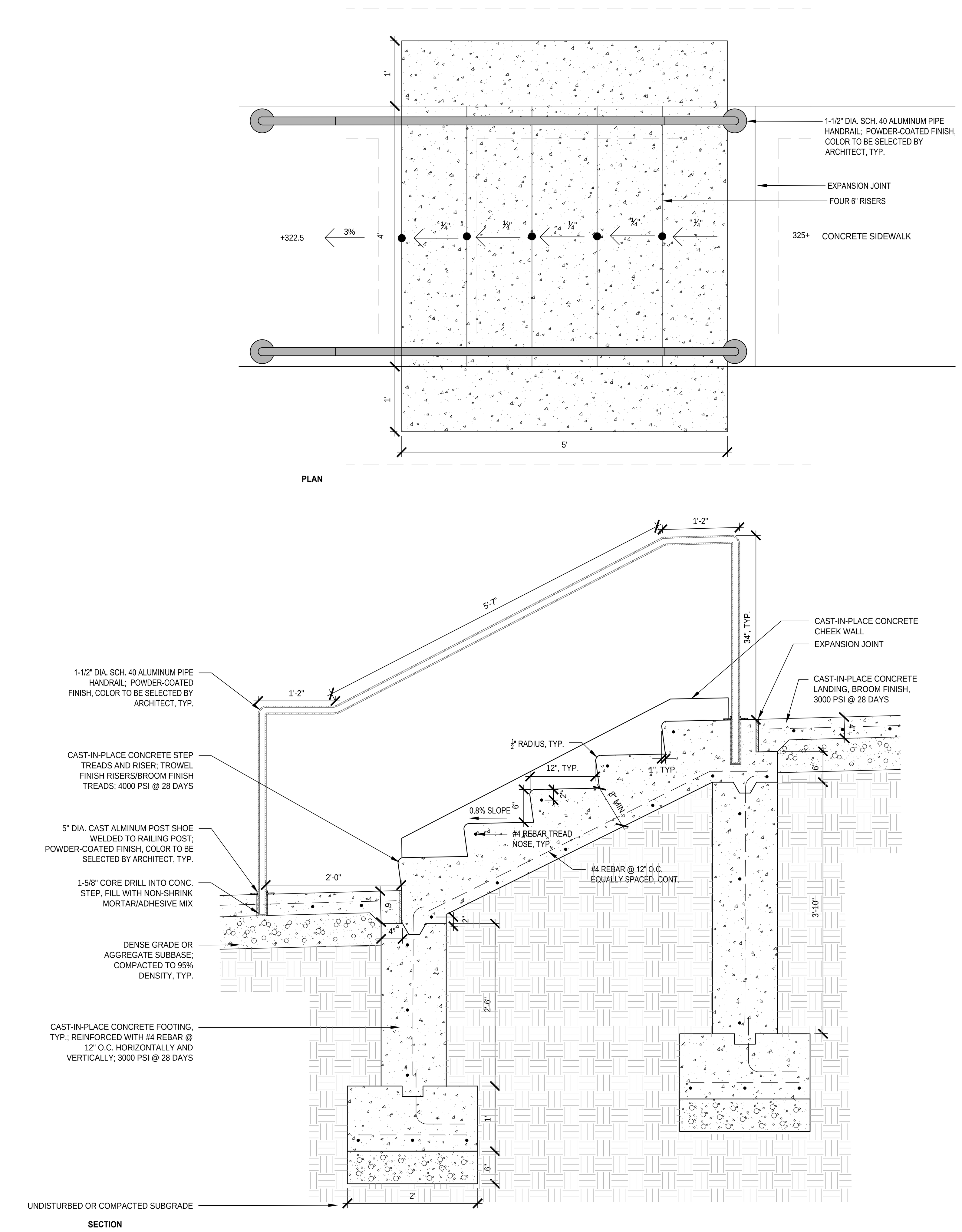

4 BASKETBALL HALF COURT
1"=10'-0"



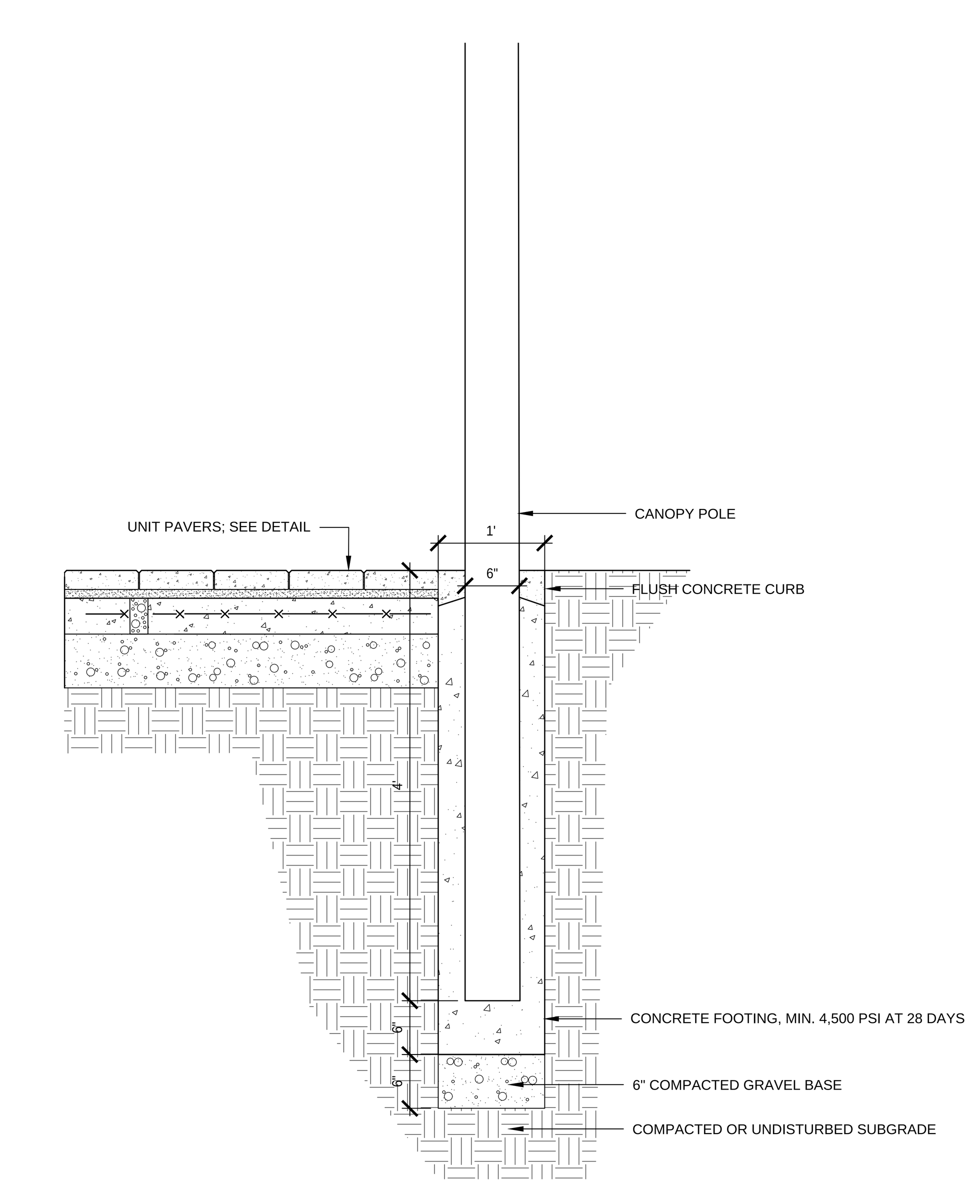

5 SEAT WALL IN LEARNING GARDEN
1"=1'-0"




6 BOULDER BENCH
1"=1'-0"




7 CONCRETE STEPS
1"=1'-0"




8 CANOPY AT OUTDOOR CLASSROOM
1"=1'-0"

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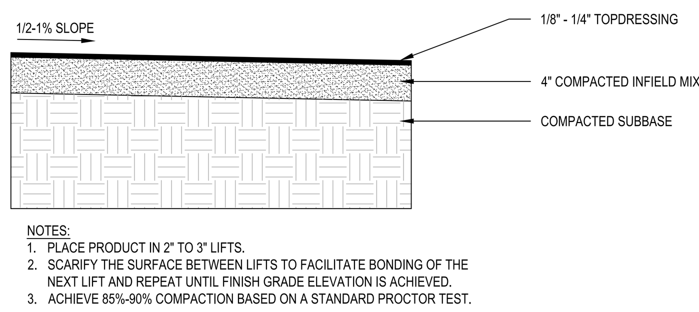
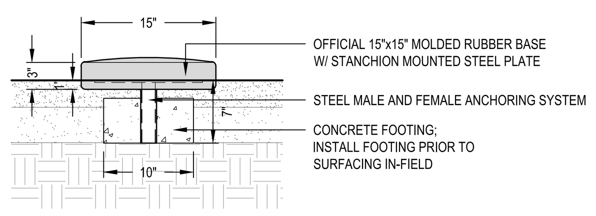
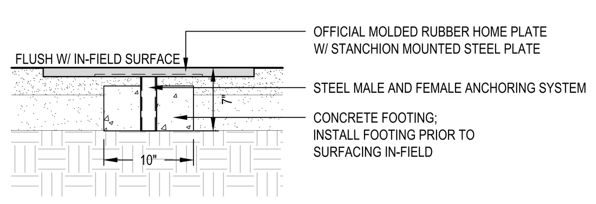
SHEET #: L4.20



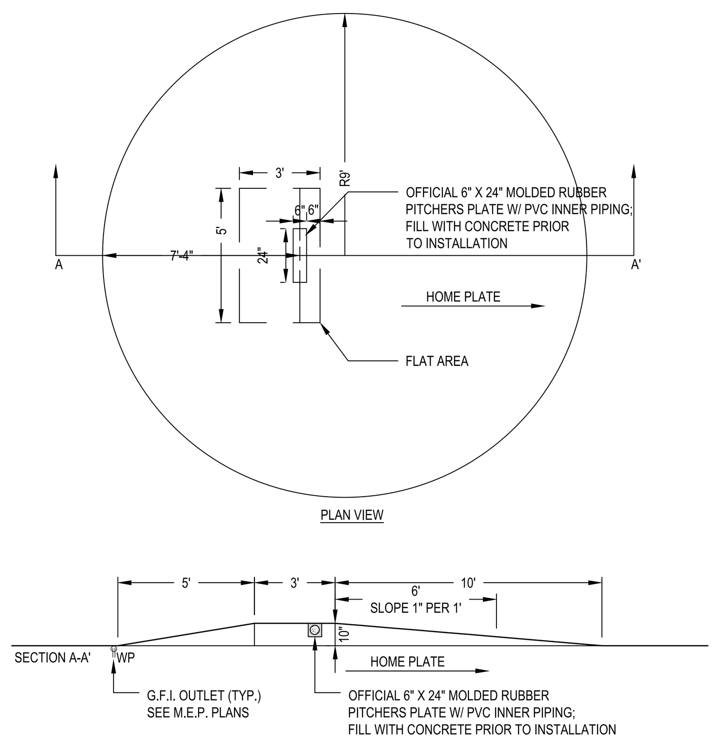

1 SKINNED INFIELD
1"=1'-0"



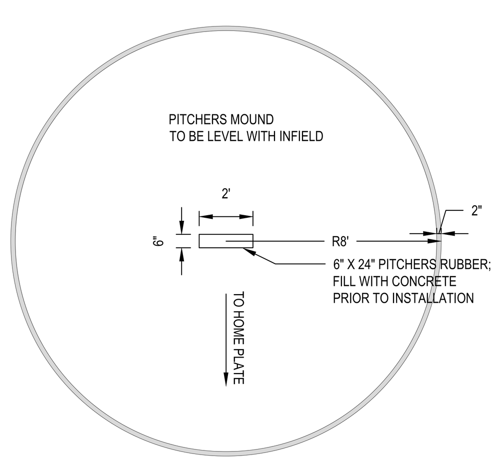

2 HOME PLATE AND BASE
1"=1'-0"



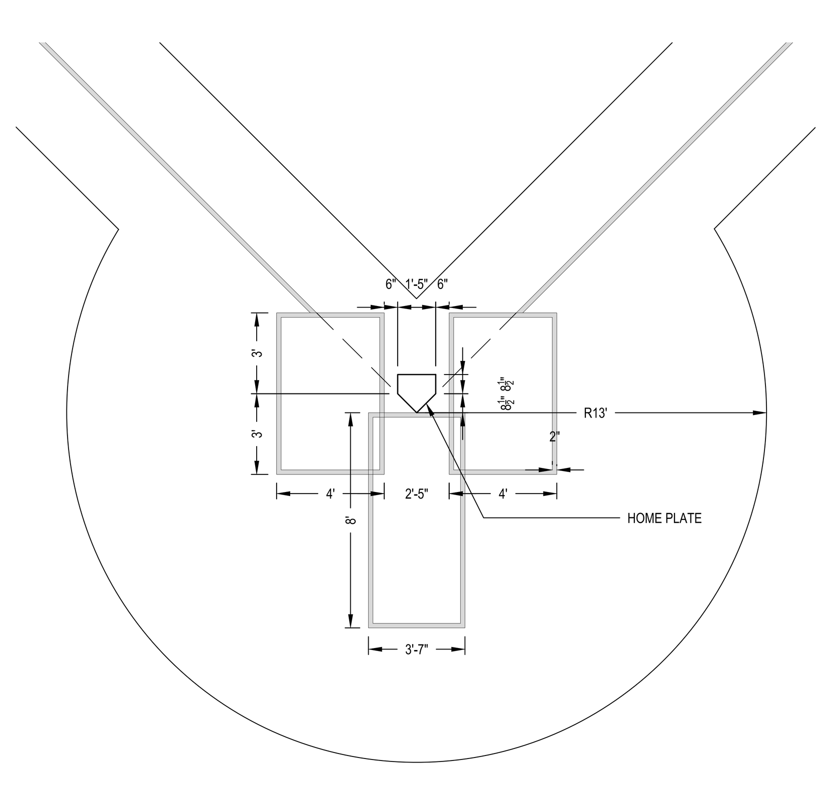

3 PITCHERS RUBBER
1"=1'-0"



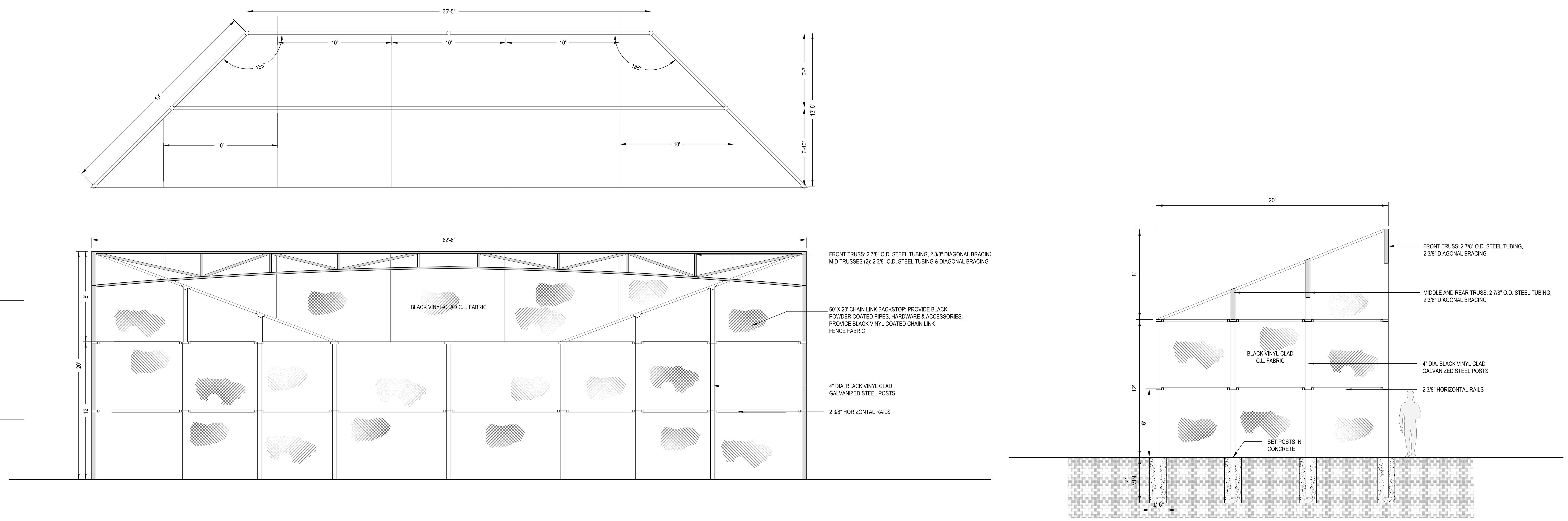

4 BASEBALL FIELD PITCHERS MOUND
1/4"=10'-0"



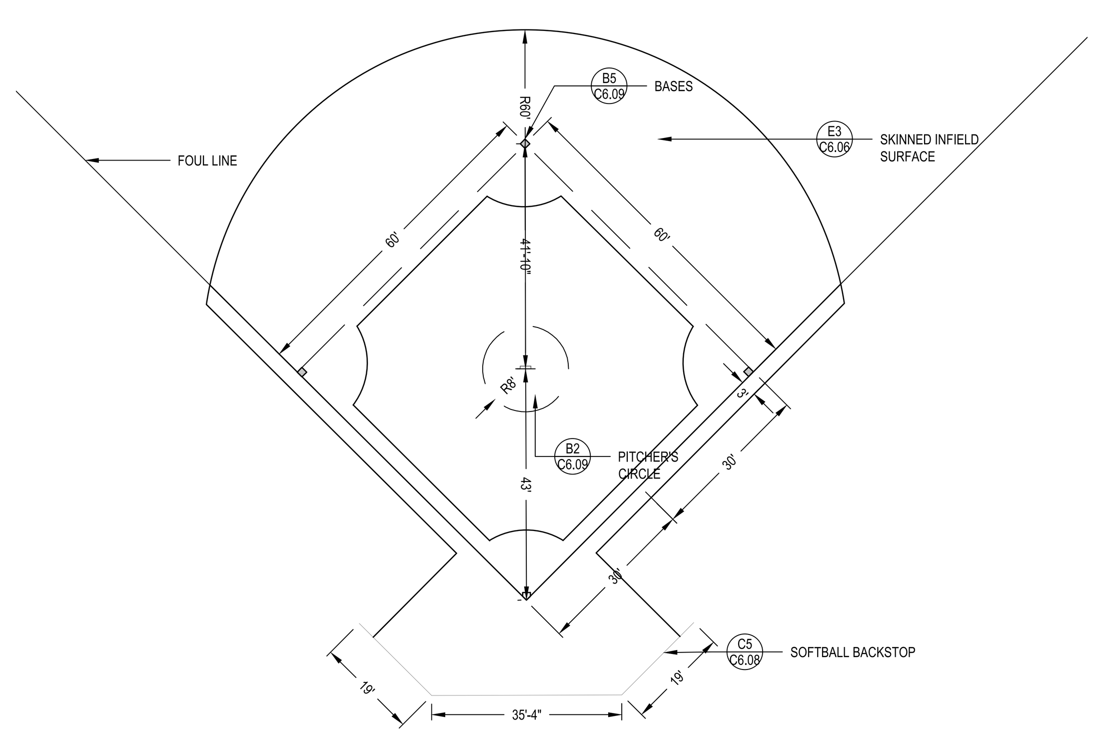

5 SOFTBALL FIELD PITCHERS MOUND
1/4"=10'-0"



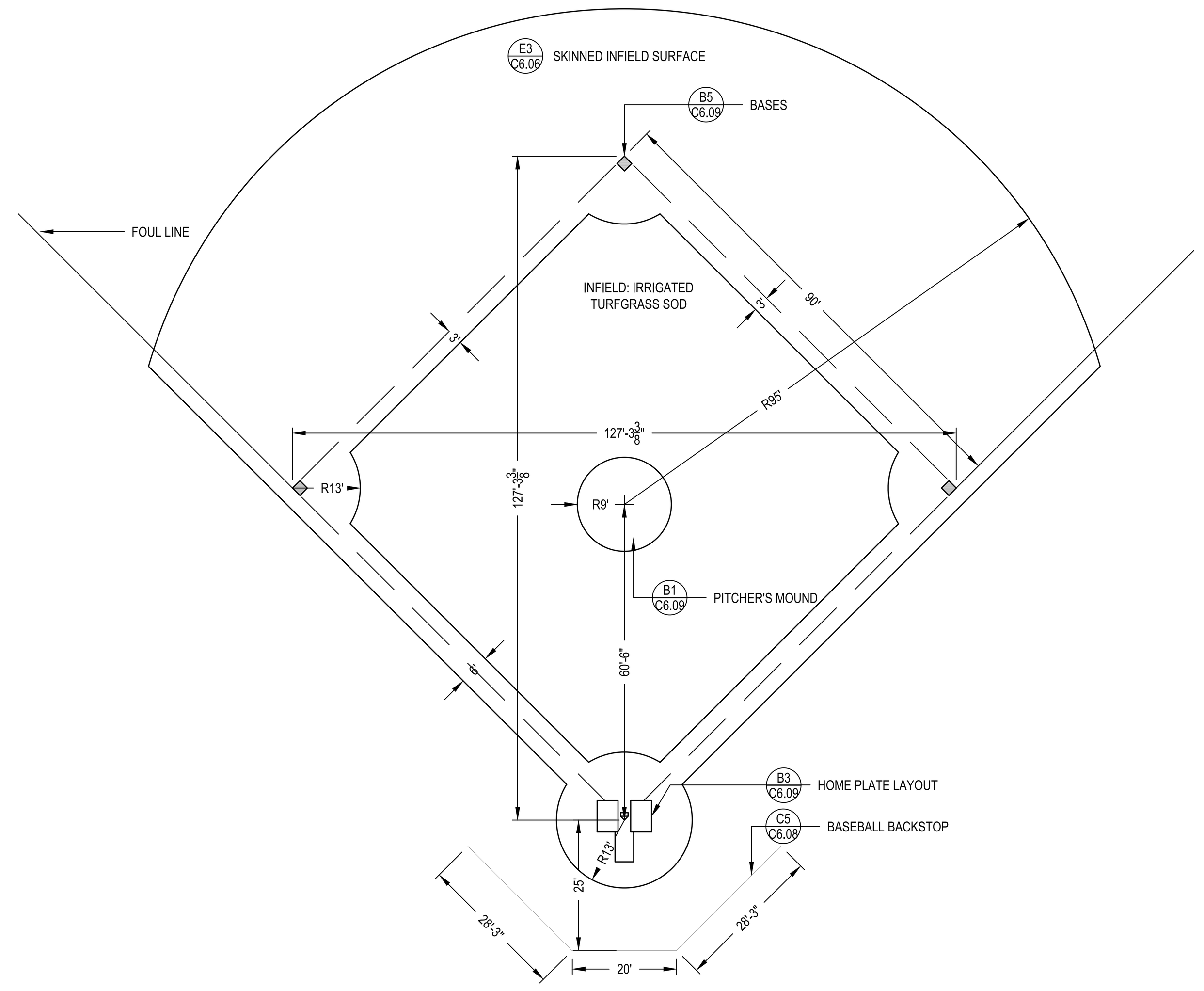

6 BASEBALL HOME PLATE
1/4"=1'-0"



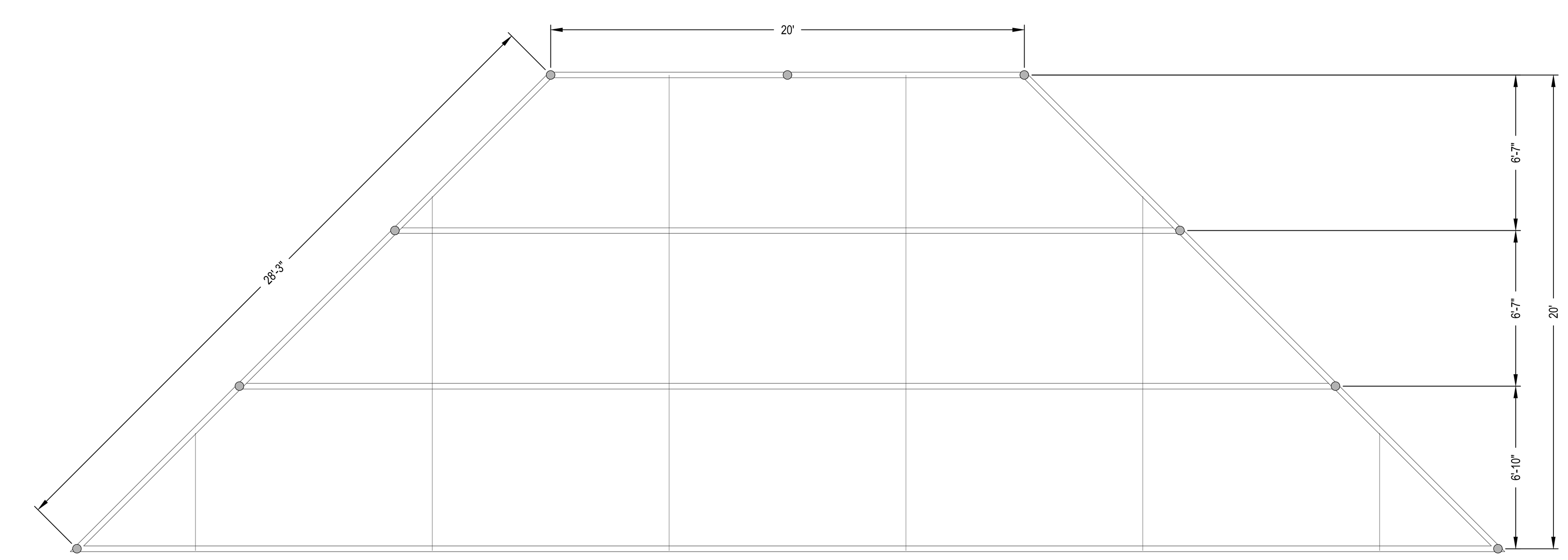

7 SOFTBALL BACKSTOP
1/4"=1'-0"



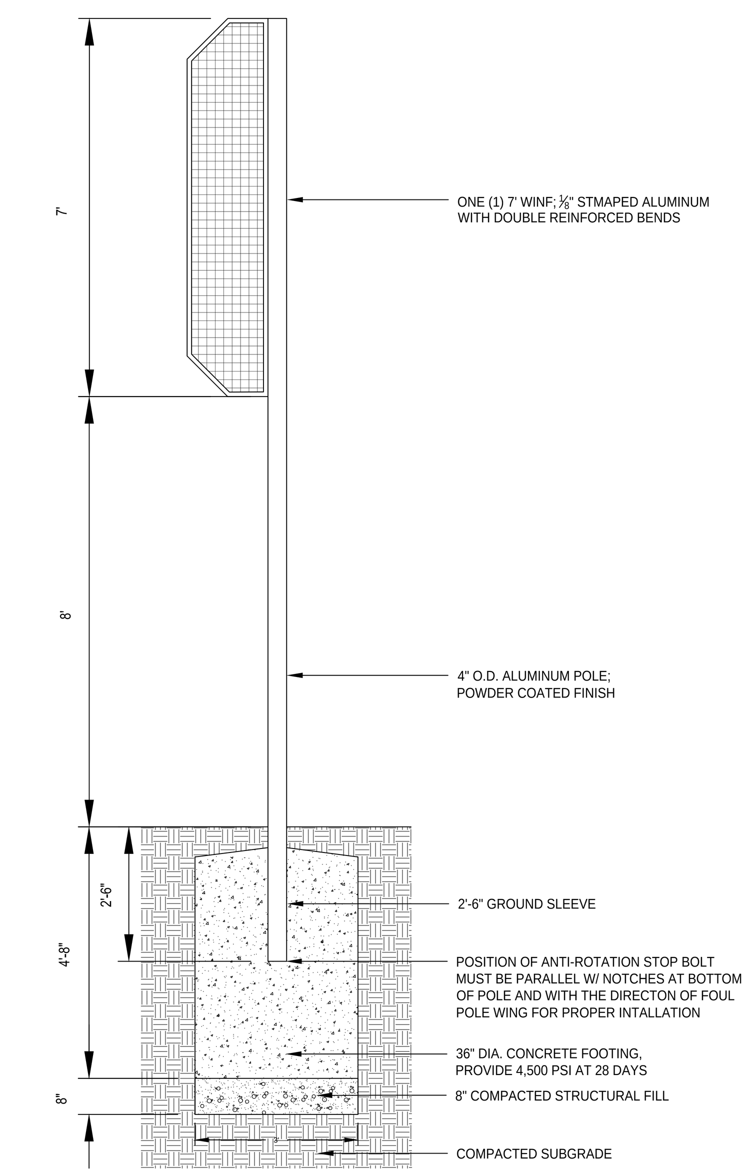

8 SOFTBALL FIELD
1"=20'-0"



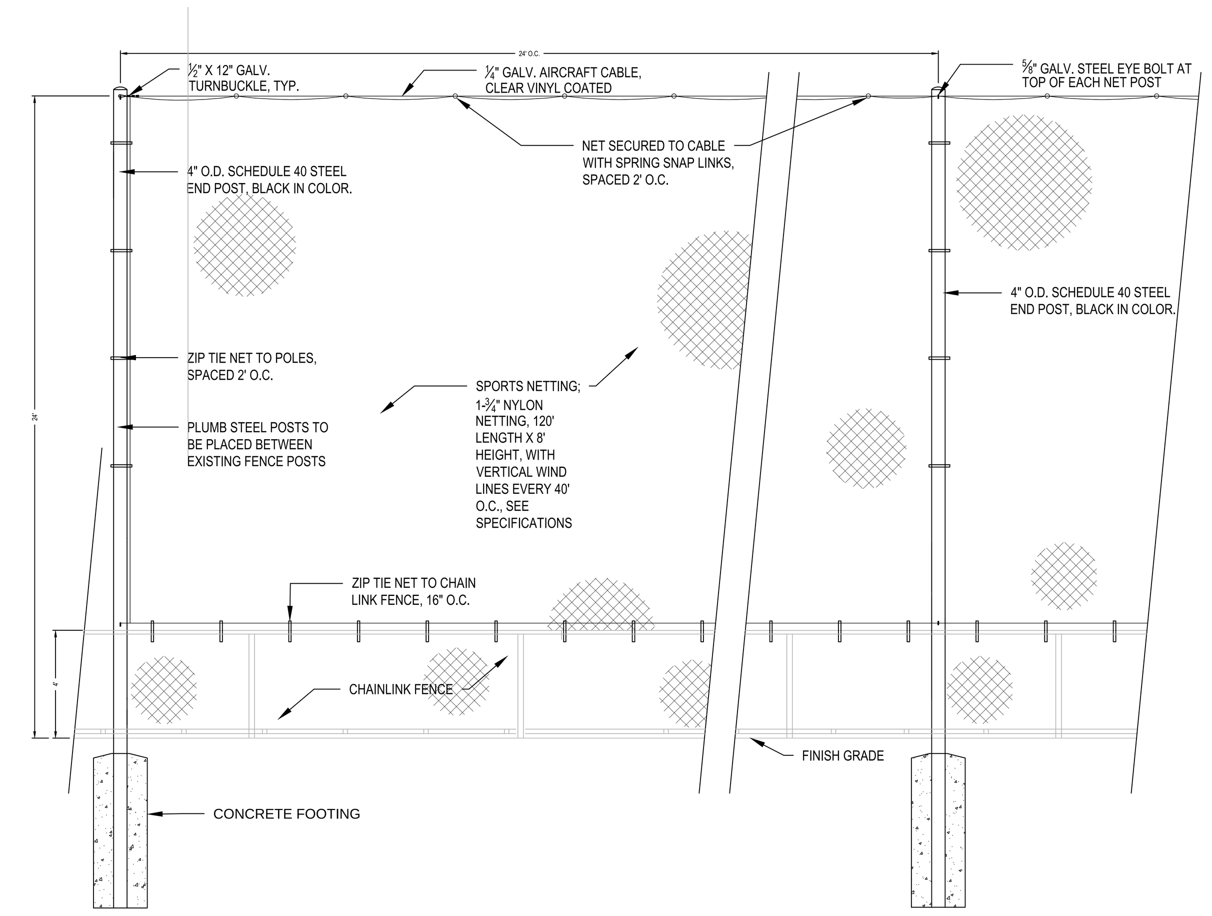

9 BASEBALL FIELD
1"=20'-0"




10 BASEBALL BACKSTOP
1/4"=1'-0"




11 FOUL POLE
1"=20'-0"




12 POLES W/ NYLON SAFETY NETTING
1/4"=1'-0"

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21 CRESCENT STREET
WHITINSVILLE, MA 01588

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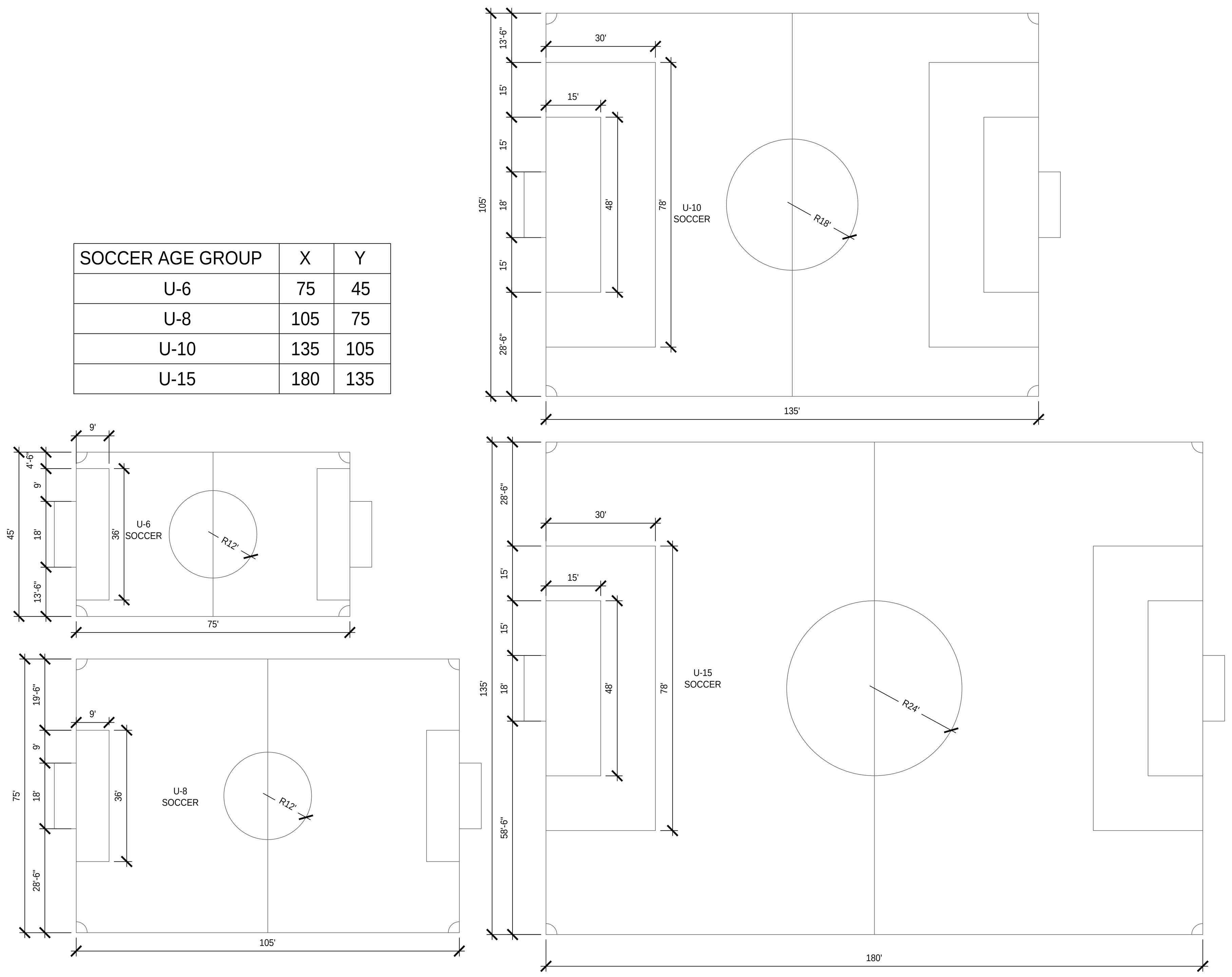
| REVISION: | Date: |
|---|---|
| | |

DATE: 04/09/2019
SCALE: AS NOTED

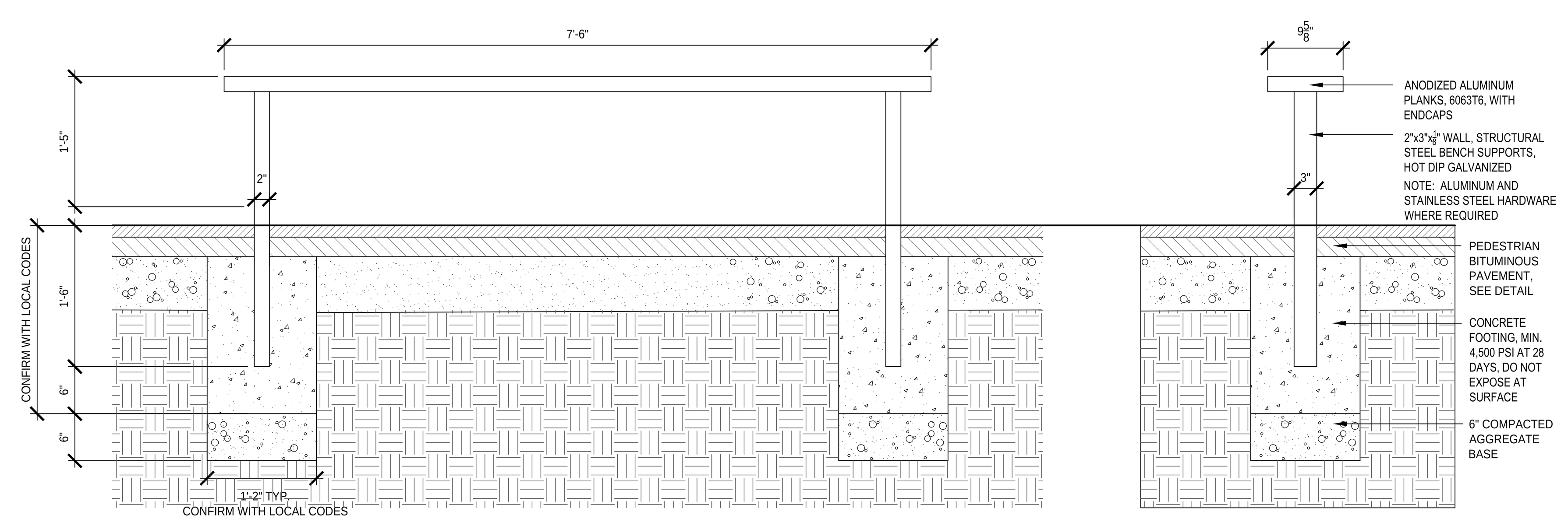
SHEET TITLE: DETAILS

SHEET #: L4.30

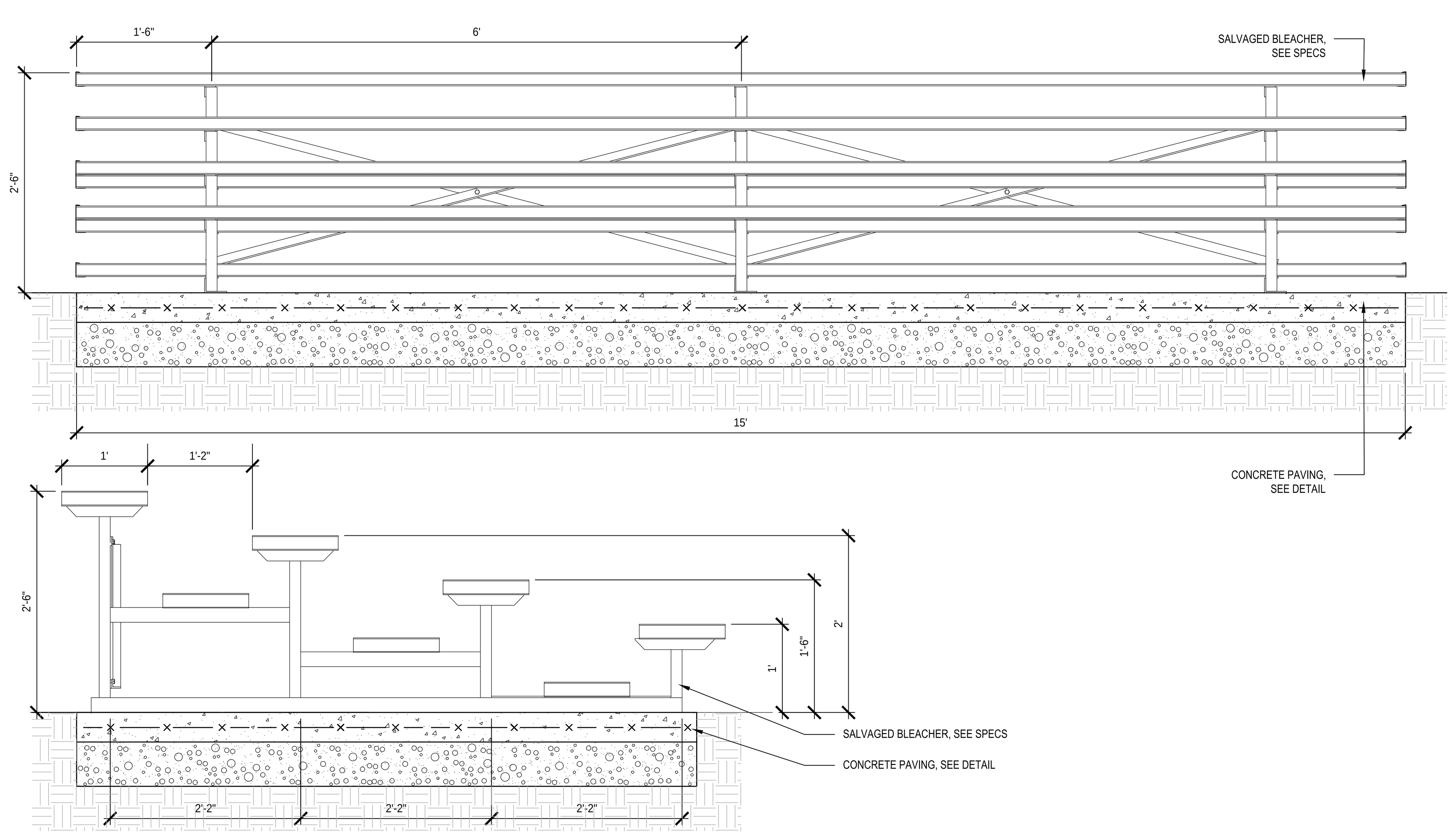
| SOCCER AGE GROUP | X | Y |
|---|---|---|
| U-6 | 75 | 45 |
| U-8 | 105 | 75 |
| U-10 | 135 | 105 |
| U-15 | 180 | 135 |




1 SOCCER FILEDS
1"=20'-0"




2 ALUMINUM PLAYERS BENCH
1"=1'-0"




3 ALUMINUM BLEACHER
1"=1'-0"

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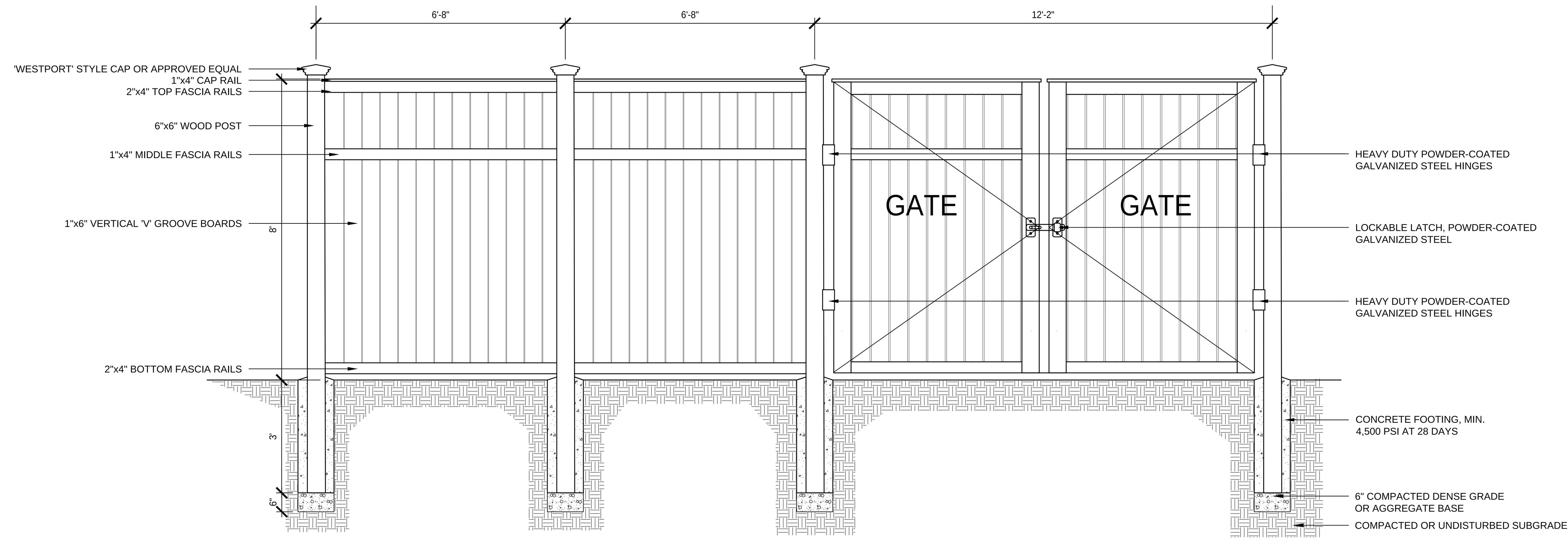
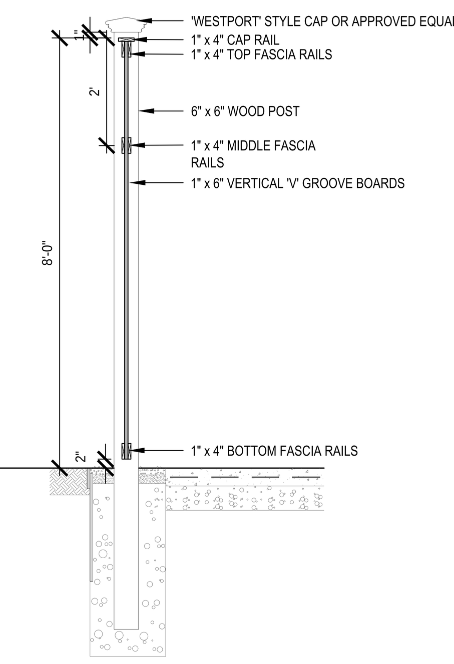
DATE: 04/09/2019
SCALE: AS NOTED

SHEET TITLE:
DETAILS

SHEET #:
L4.40



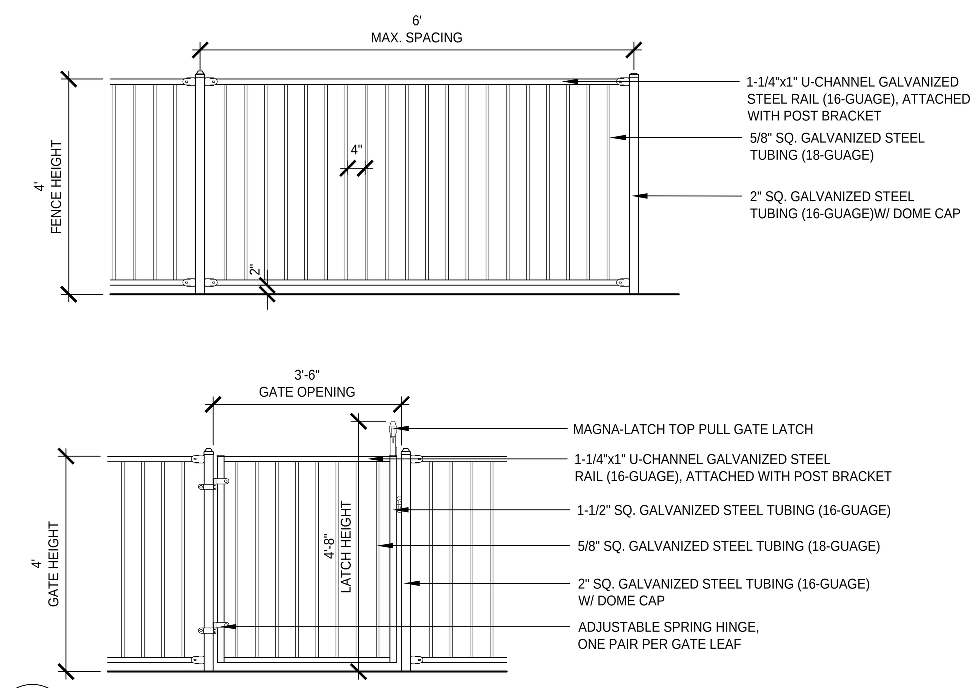

FRONT ELEVATION




SECTION

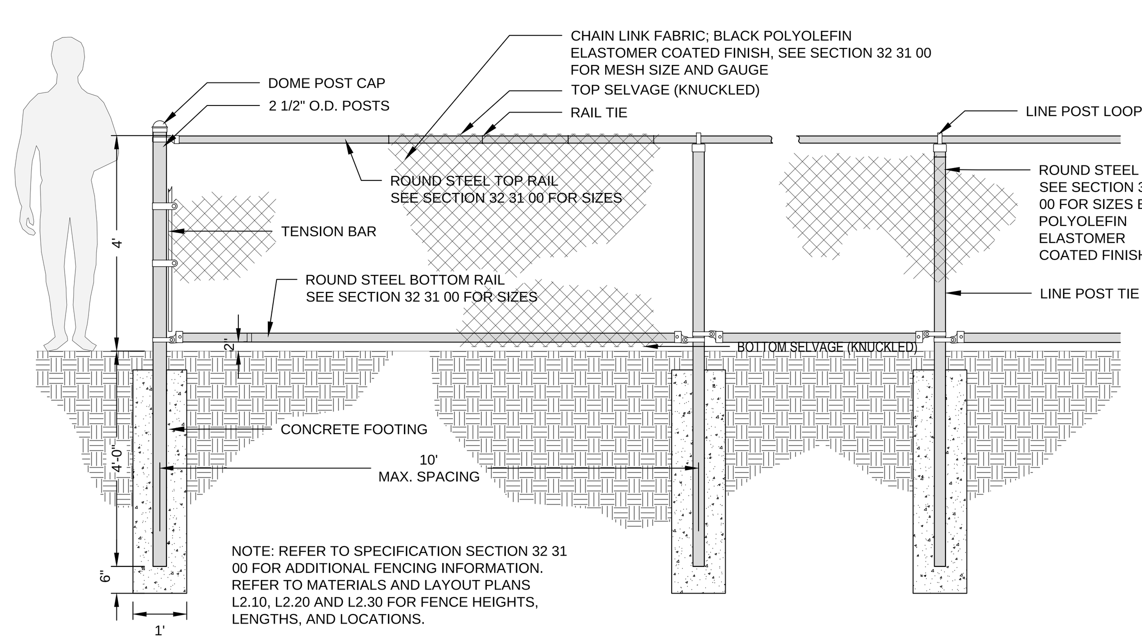
## 1 8' HT. WOOD FENCE 'B'

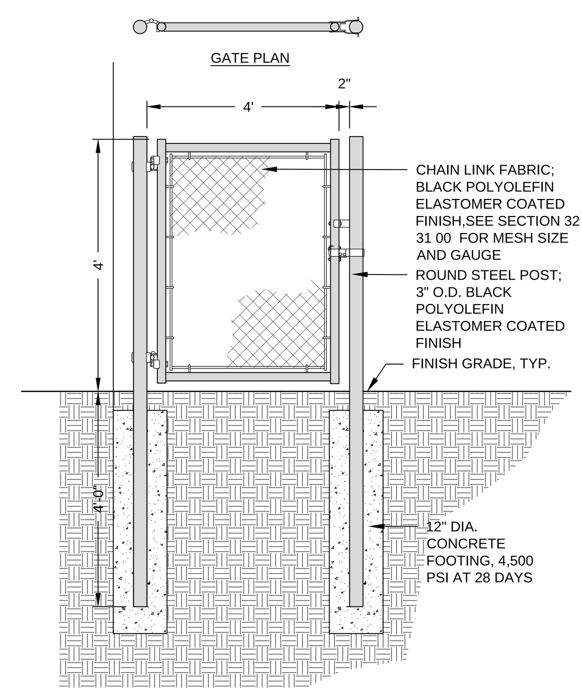
1"=1'-0"



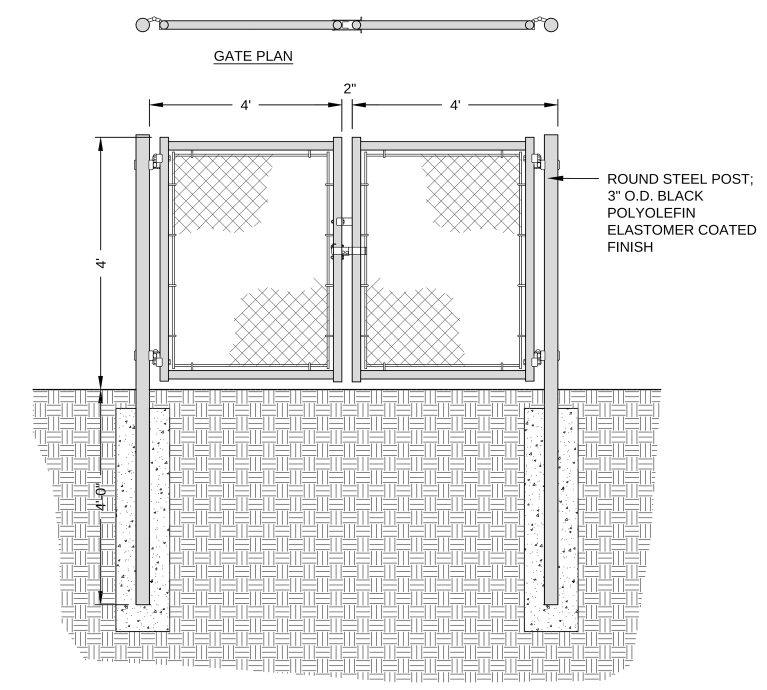

## 2 ORNAMENTAL FENCE AND GATE

1"=1'-0"



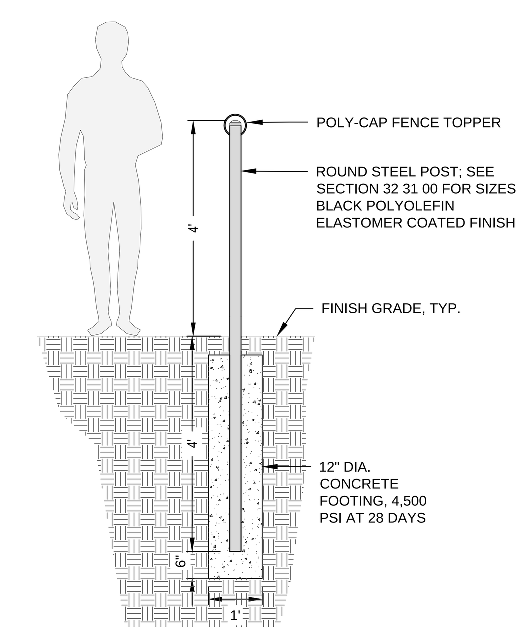

SINGLE GATE ELEVATION




DOUBLE GATE ELEVATION

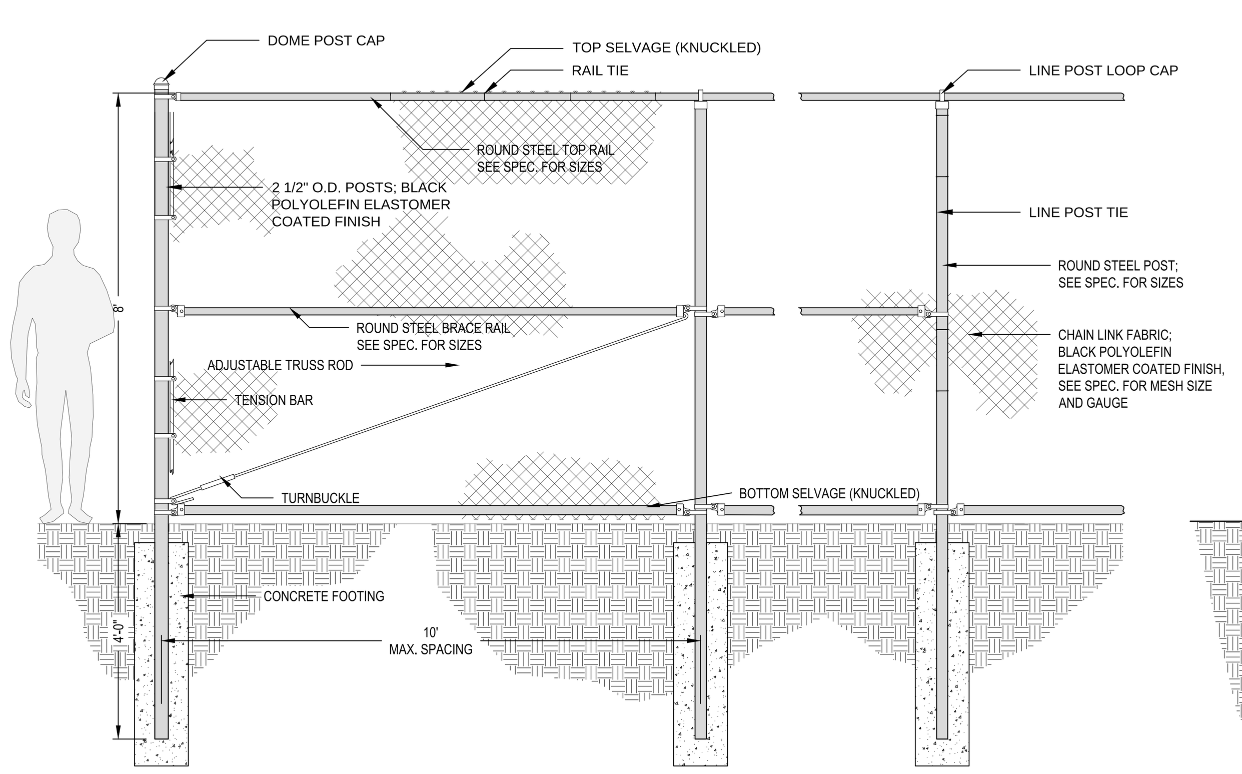
## 3 4' HT. VINYL-CLAD CHAIN LINK FENCE

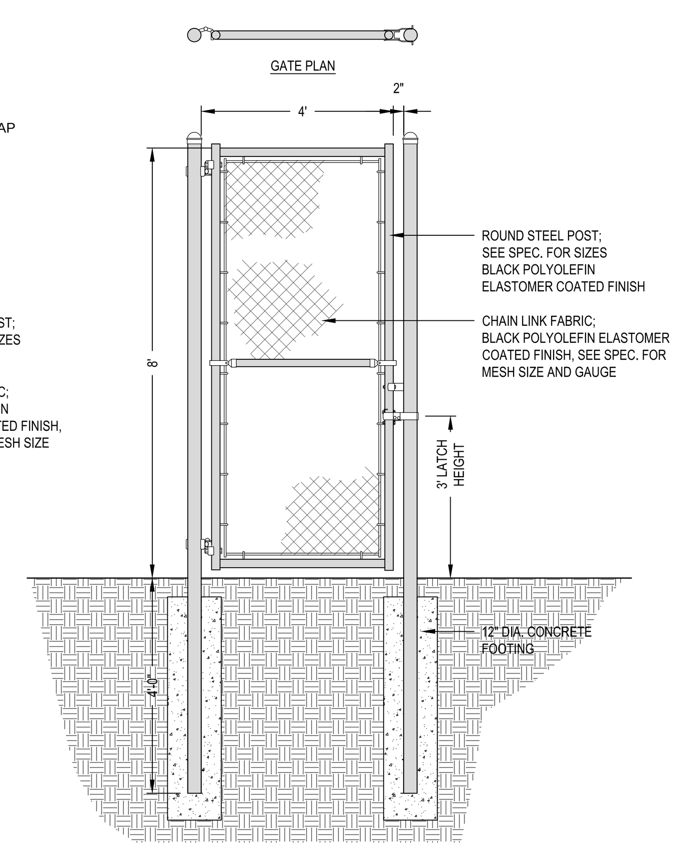
1/2"=1'-0"




## 4 4' HT. VINYL-CLAD CHAIN LINK FENCE W/TOPPER

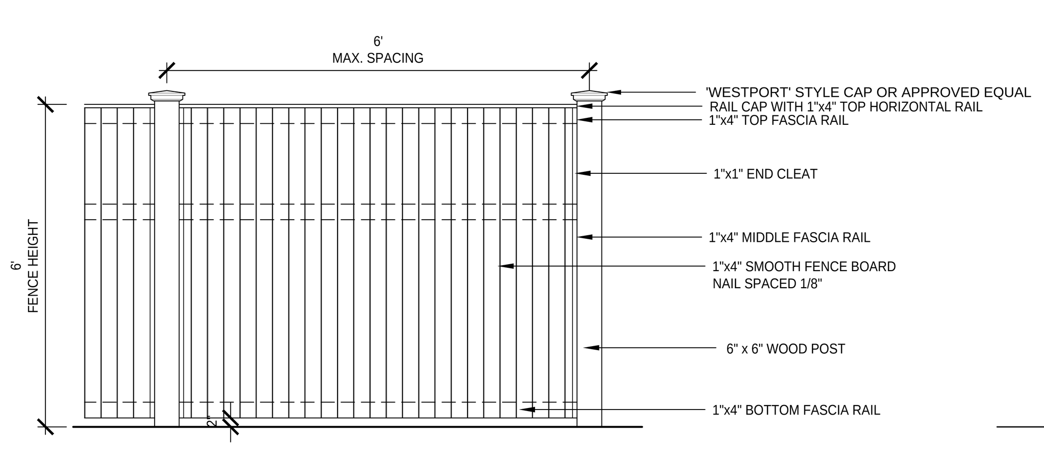
1/2"=1'-0"



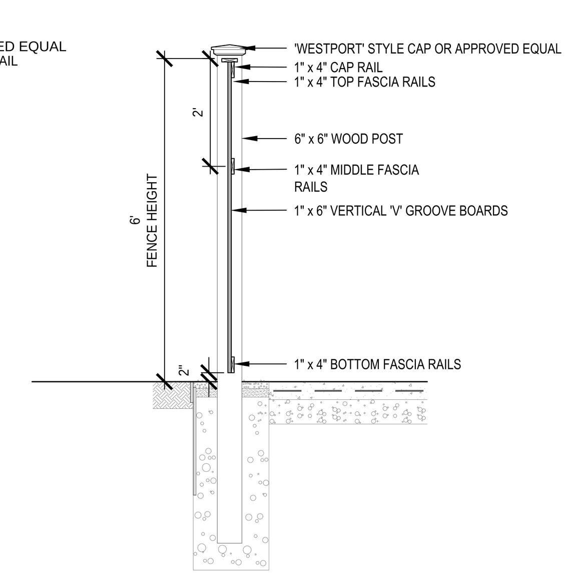




## 5 8' HT. VINYL-CLAD CHAIN LINK FENCE

1/2"=1'-0"




FRONT ELEVATION




SECTION

## 6 6' WOOD FENCE 'A'

1/2"=1'-0"

HORIUCHI SOLIEN INC.
P.O. BOX 914
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FAX 508 540-8651
info@horiuchisolien.com
HORIUCHI SOLIEN
LANDSCAPE ARCHITECTS

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DORE & WHITTIER ARCHITECTS, INC.

Project No. 17-759

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21 CRESCENT STREET
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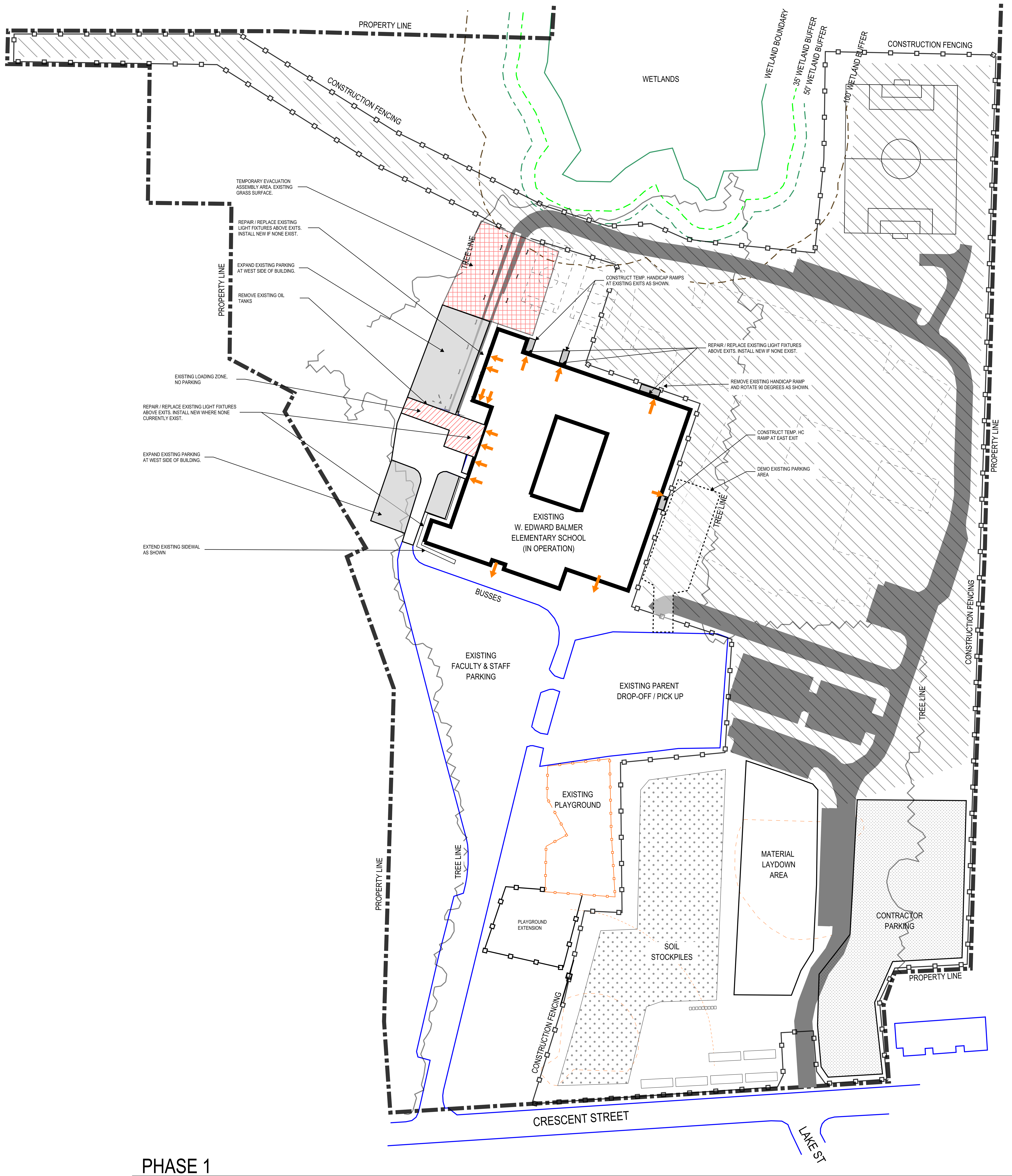
SHEET TITLE: DETAILS

SHEET #: L4.50




PHASE 1

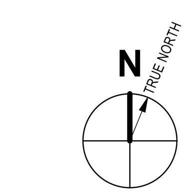
## PHASING NOTE

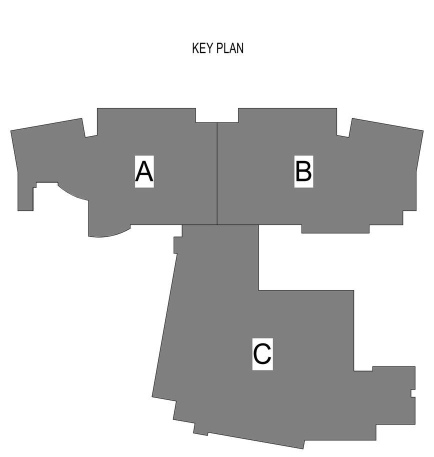
**PHASE 1**

1. EXISTING SCHOOL ACCESS DRIVES, BUS / PARENT DROP-OFF ZONES, AND FACULTY PARKING TO REMAIN OPERATIONAL THROUGHOUT PHASE 1.
2. CREATION OF NEW CONSTRUCTION ENTRANCE OFF CRESCENT STREET.
3. INSTALLATION OF CONSTRUCTION FENCING SEPARATING WORK AREA FROM ADJACENT SCHOOL BUILDING, ABUTTERS, ROADS, PARKING LOTS, AND PLAYGROUND.
4. PROTECTIVE MEASURES INSTALLED ADJACENT TO WETLANDS.
5. CLEARING AND ROUGH GRADING OF WOODED AREAS FOR NEW BUILDING, ROADWAYS, PARKING AREA (SOUTH OF PROPOSED NEW BUILDING) AND PEDESTRIAN PATH.
6. INSTALLATION OF NEW UNDERGROUND UTILITIES.
7. CONSTRUCTION OF NEW BUILDING, ROADWAYS, AND PARKING (SOUTH OF PROPOSED NEW BUILDING).

**PHASE 1A** (SEE PHASE 2 DIAGRAM)

1. DEMOLITION OF PARENT DROP-OFF TO BEGIN AT COMPLETION OF SCHOOL YEAR.
2. PHASE 2 BUS LOOP TO BE COMPLETED PRIOR TO START OF NEW SCHOOL YEAR.

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SCALE:

SHEET TITLE: PHASE 1

SHEET #: AP1.10

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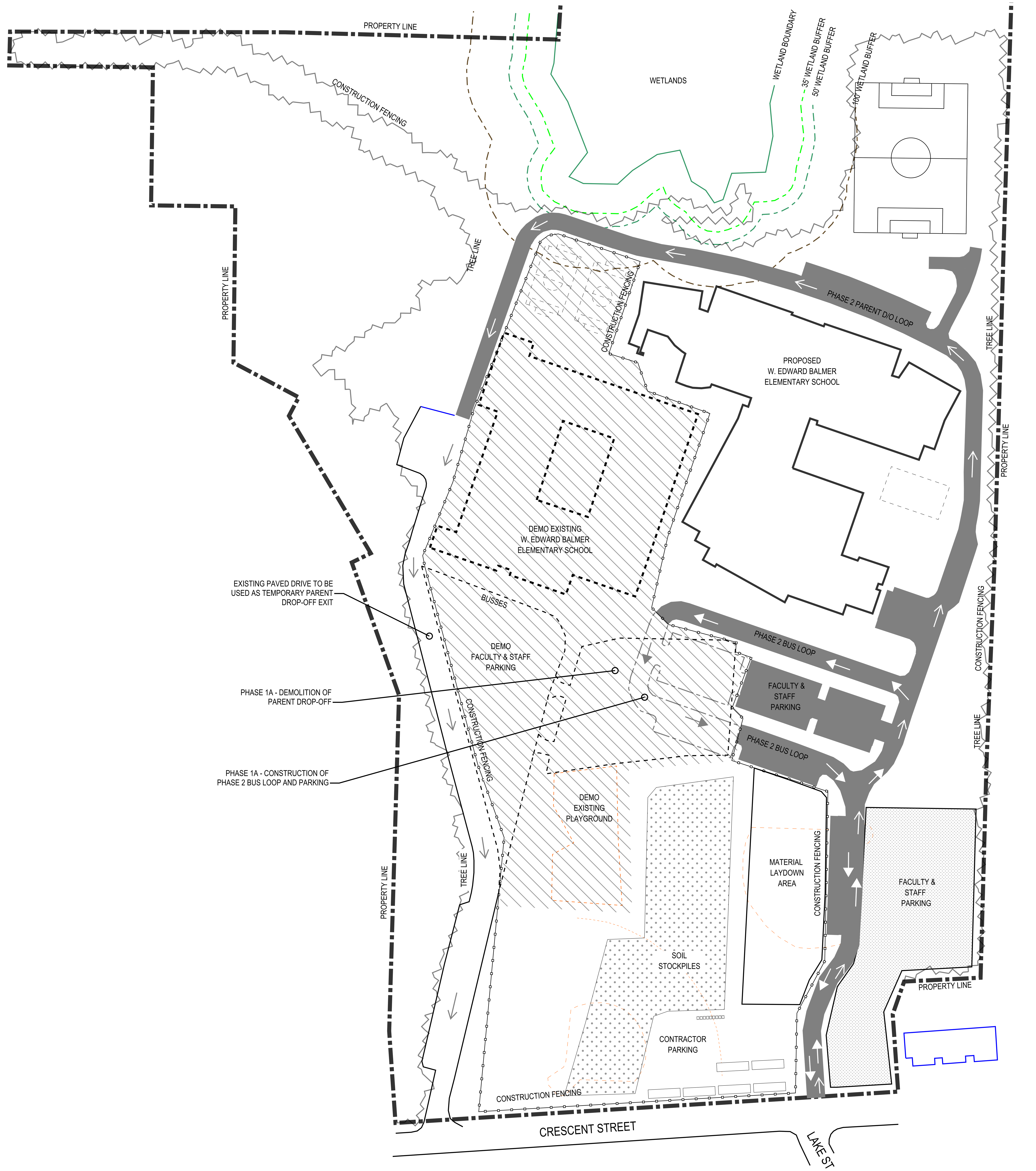
4/1/2019 11:26:37 AM

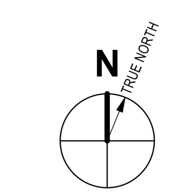



PHASE 2

## PHASING NOTE

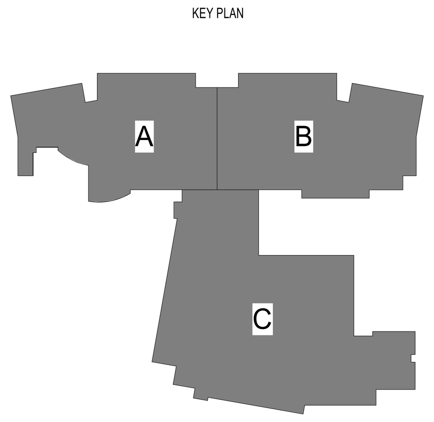
**PHASE 2**

1. DEMOLITION OF EXISTING FACULTY PARKING, WALKWAYS, AND PLAYGROUND.
2. DEMOLITION OF ORIGAL W. EDWARD BALMER ELEMENTARY SCHOOL.
3. COMPLETE SITE WORK TO NORTH, AND EAST OF BUILDING.




PROJECT NORTH

KEY PLAN

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260 Merrimac Street, Bldg 7
P : 978.499.2999
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Project No. 17-759

# W. EDWARD BALMER ELEMENTARY SCHOOL

21 CRESCENT STREET
WHITINSVILLE, MA 01588



**Planning Board Submission**

| REVISION: | Date: |
|---|---|
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DATE: 04/09/2019
SCALE:

SHEET TITLE: PHASE 2

SHEET #: **AP1.20**

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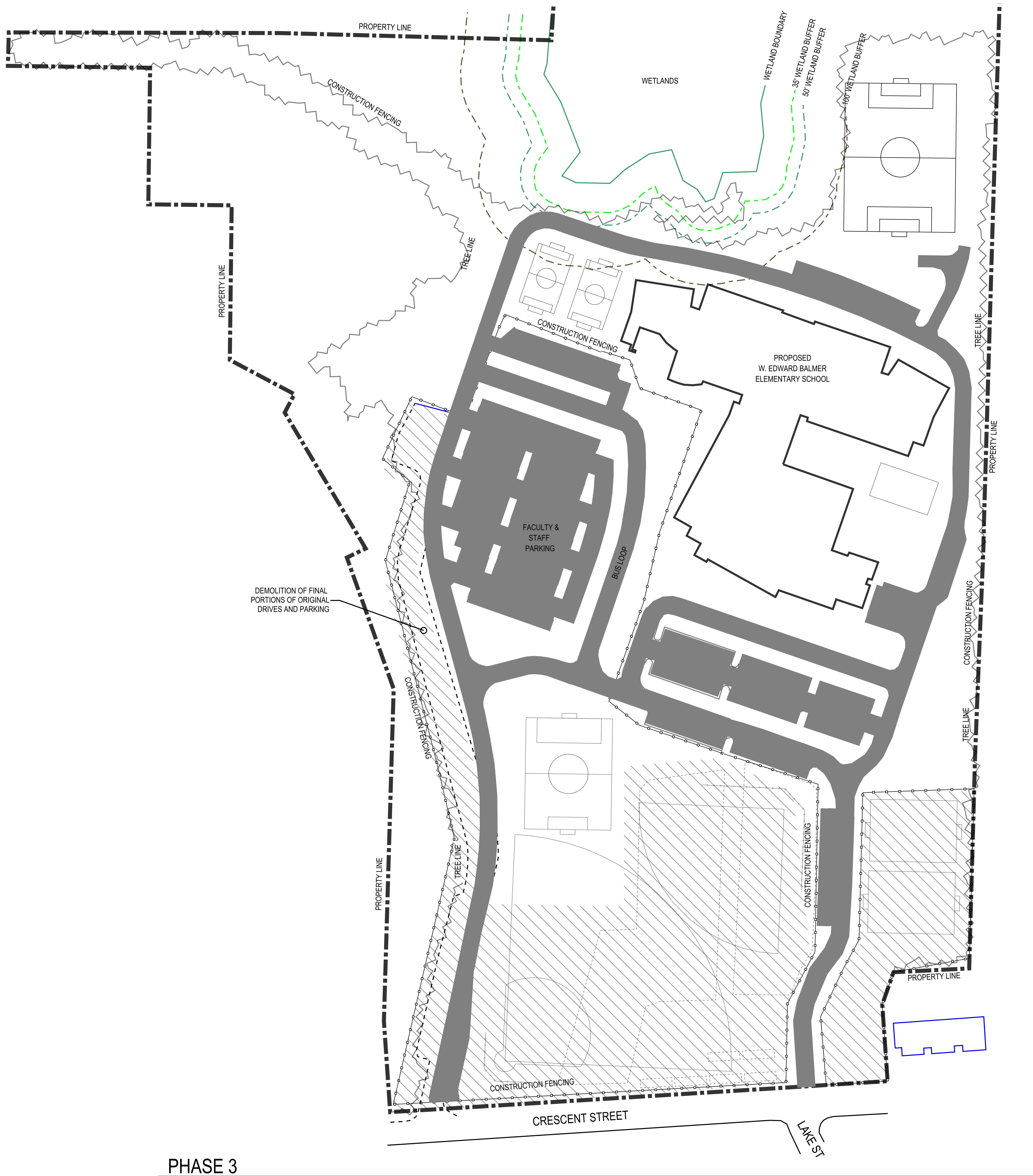
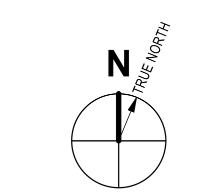


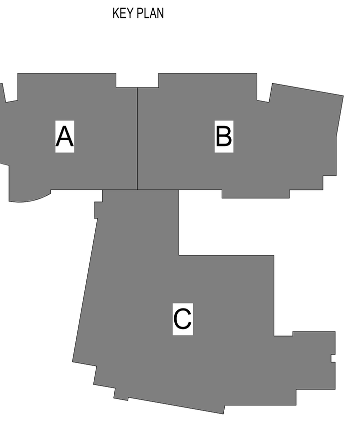

# PHASE 3

## PHASING NOTE

**PHASE 3**

1. DEMOLITION OF REMAINING PORTION OF ORIGINAL DRIVE.
2. CONSTRUCT FACULTY PARKING AREA AND REMAINING PORTION OF ACCESS DRIVE.
3. DISMANTLING OF MAJOR PORTIONS OF LAY-DOWN AREA, SOIL STOCKPILES, AND DOWNSIZING OF CM TRAILER COMPOUND.
4. RESTORATION OF VAIL RECREATIONAL FIELDS.
5. DISMANTLING OF TEMPORARY FACULTY PARKING AREA.
6. CONSTRUCTION OF FINAL SOCCER FIELDS.
7. REMOVAL OF REMAINING CONTRACTOR FENCING, TRAILERS, ETC.

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DATE: 04/09/2019
SCALE:

SHEET TITLE: PHASE 3

SHEET #: **AP1.30**

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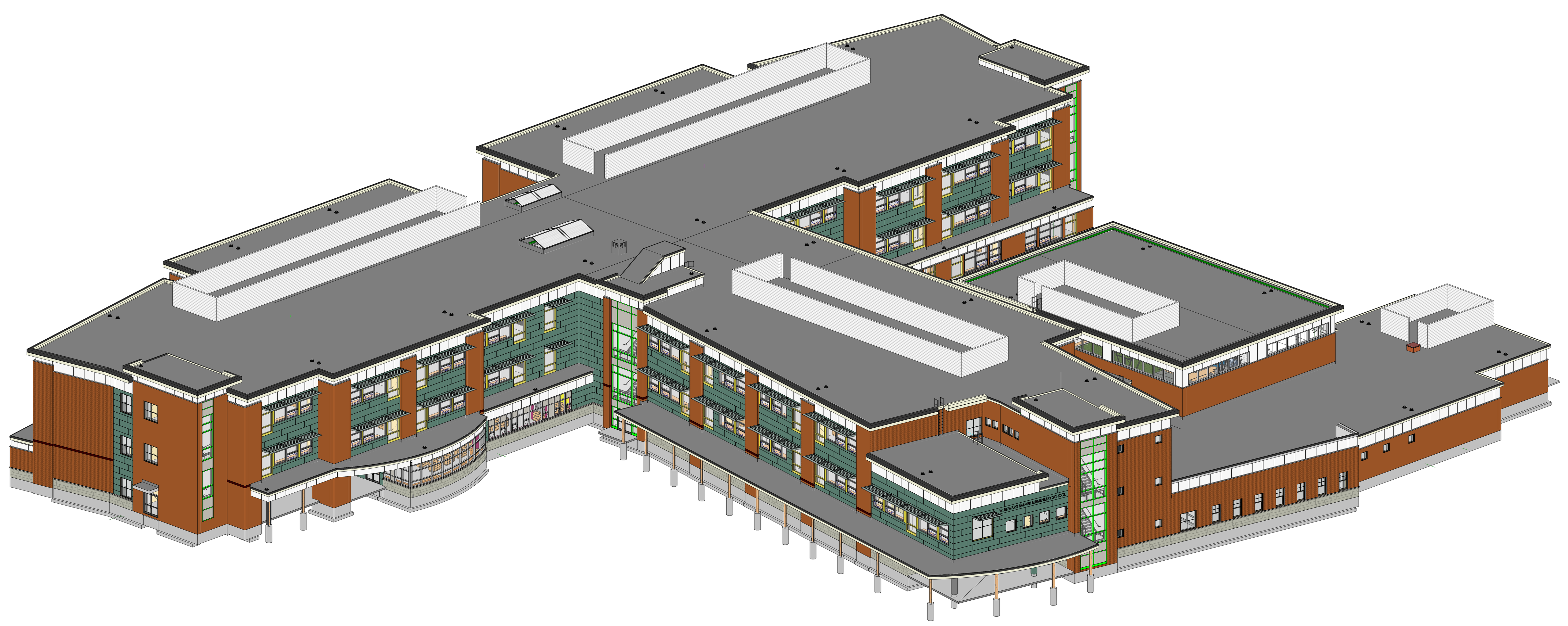
1 AXON 1 Floor



2 AXON 2

3 AXON 3

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17-759



**Planning Board Submission**

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DATE: **04/09/2019**

SCALE:

SHEET TITLE:
AXON VIEWS

SHEET #:
**A4.01**

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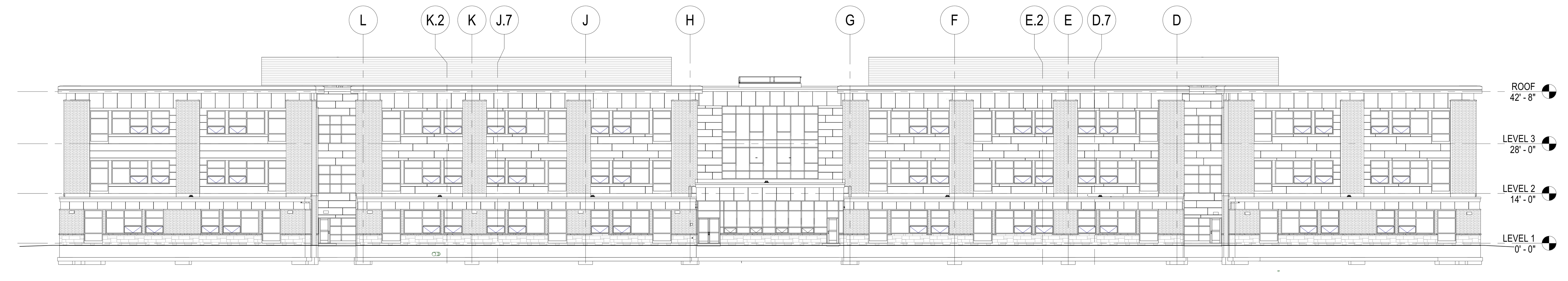
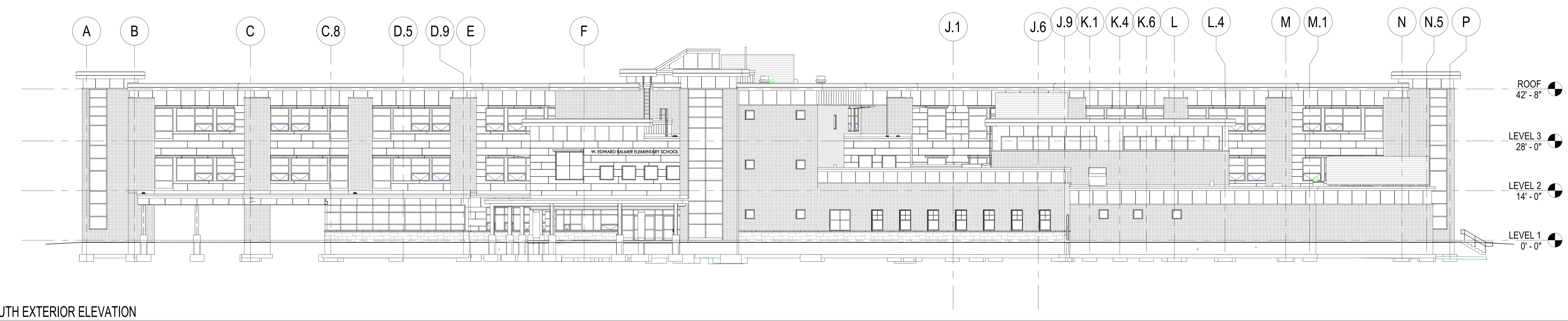
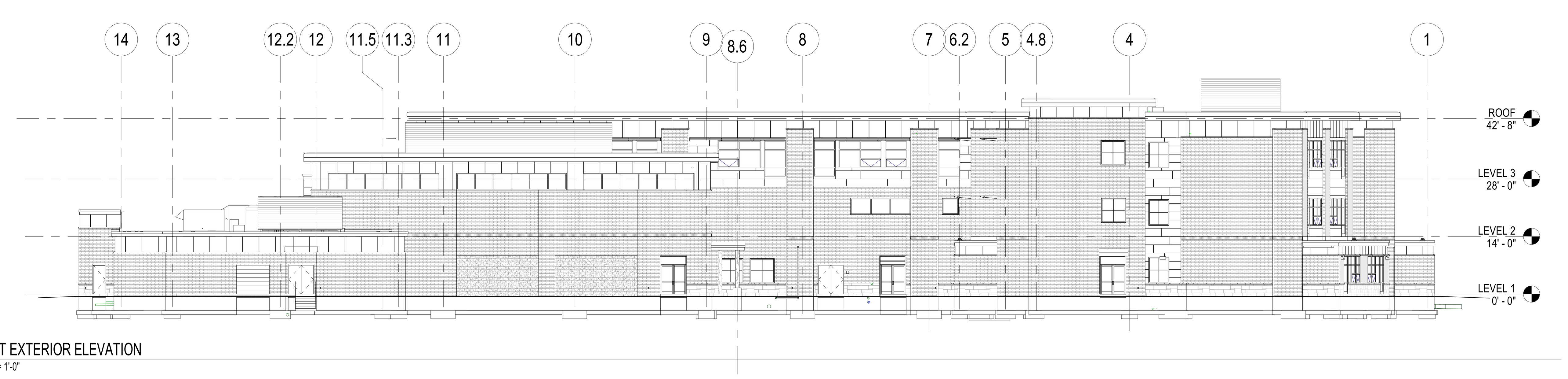
4/3/2019 3:45:06 PM



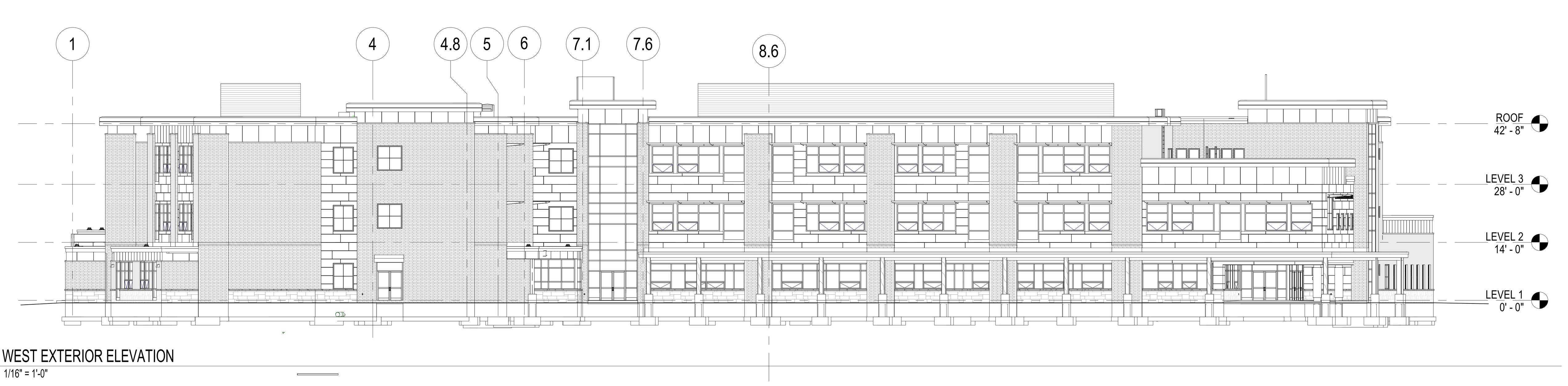

T23 NORTH EXTERIOR ELEVATION
1/16" = 1'-0"




N23 SOUTH EXTERIOR ELEVATION
1/16" = 1'-0"

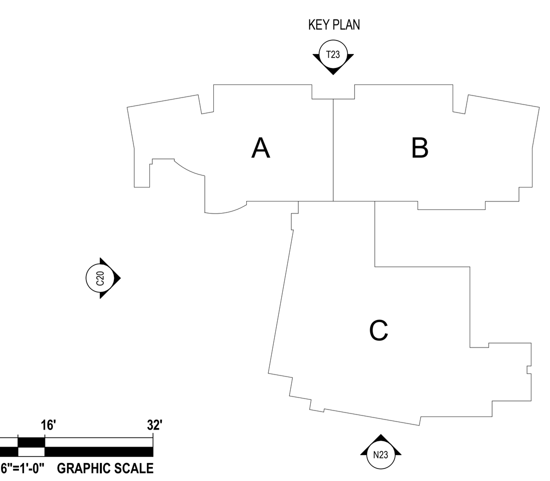



H20 EAST EXTERIOR ELEVATION
1/16" = 1'-0"




C20 WEST EXTERIOR ELEVATION
1/16" = 1'-0"

KEY PLAN




SCALE: 1/16"=1'-0" GRAPHIC SCALE

Project No. 17-759

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21 CRESCENT STREET
WHITINSVILLE, MA 01588

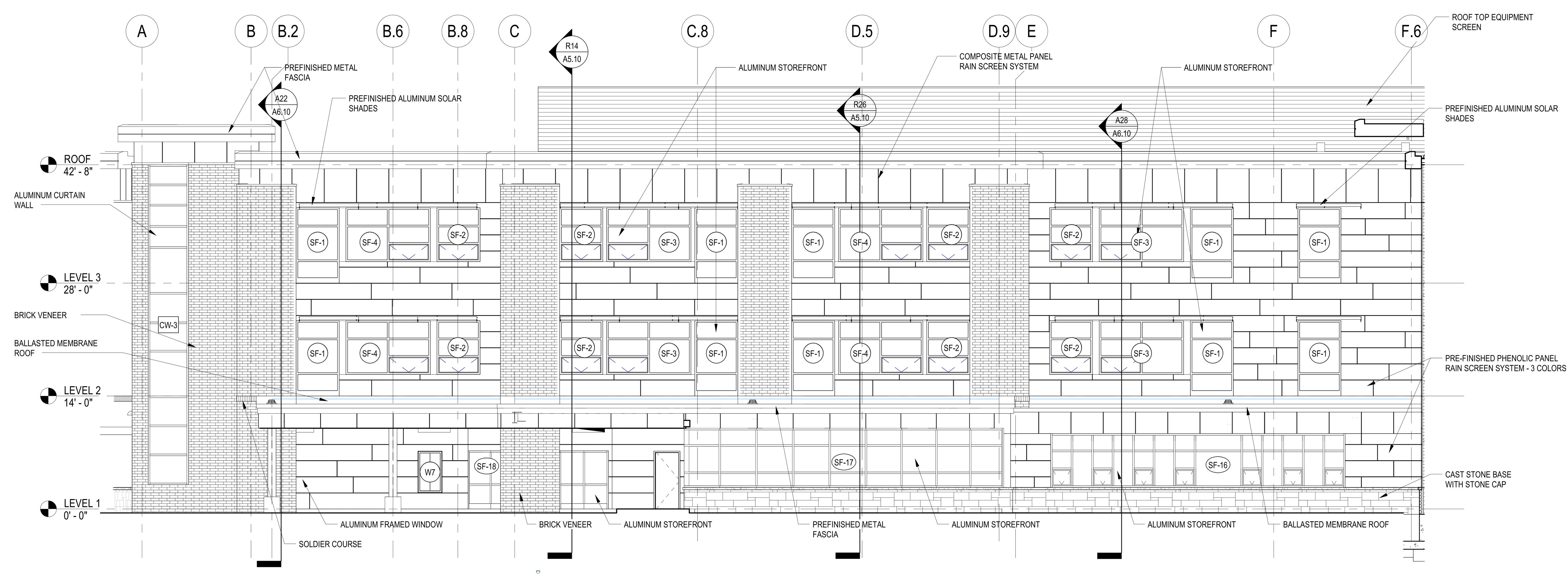
Planning Board Submission

| REVISION: | Date: |
|---|---|

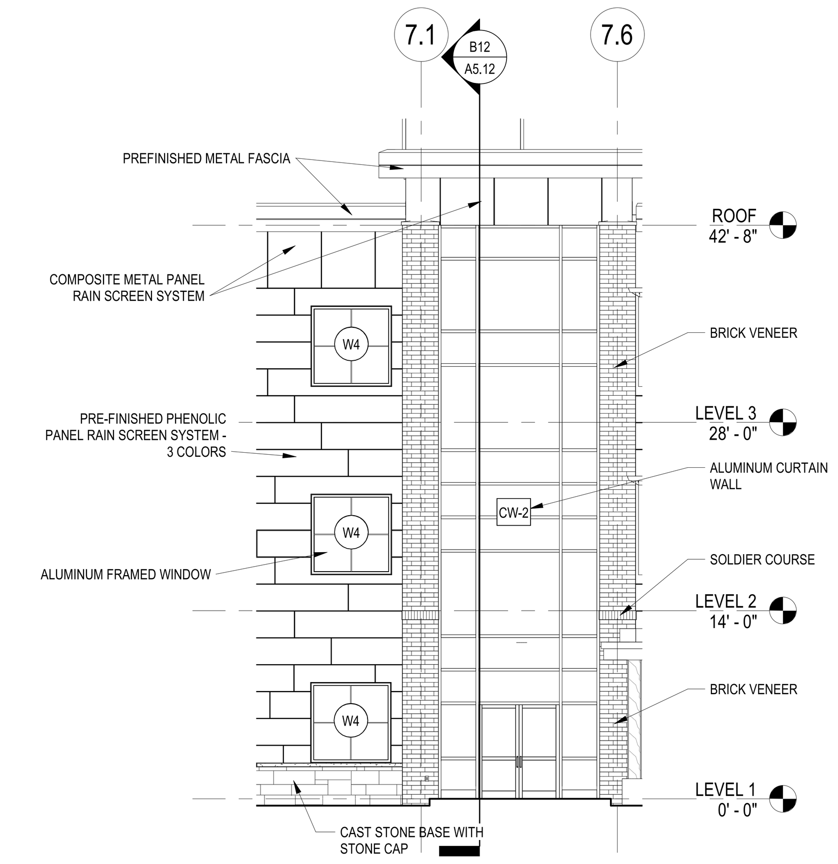
DATE: 04/09/2019
SCALE: 1/16" = 1'-0"

SHEET TITLE:
OVERALL EXTERIOR ELEVATIONS

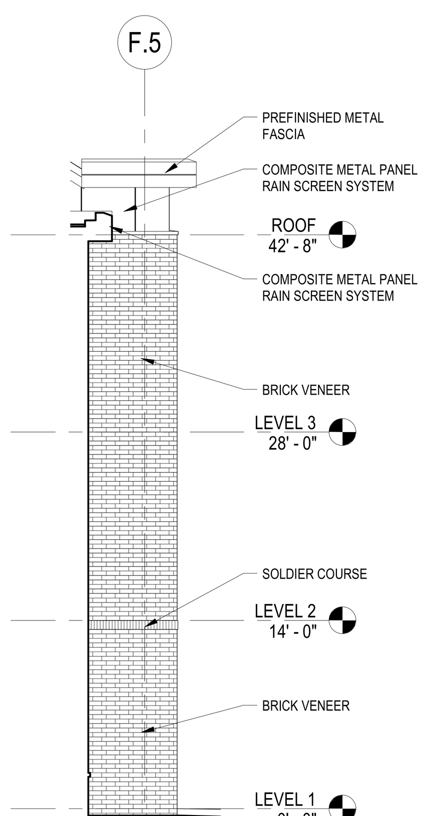
SHEET #
A4.10



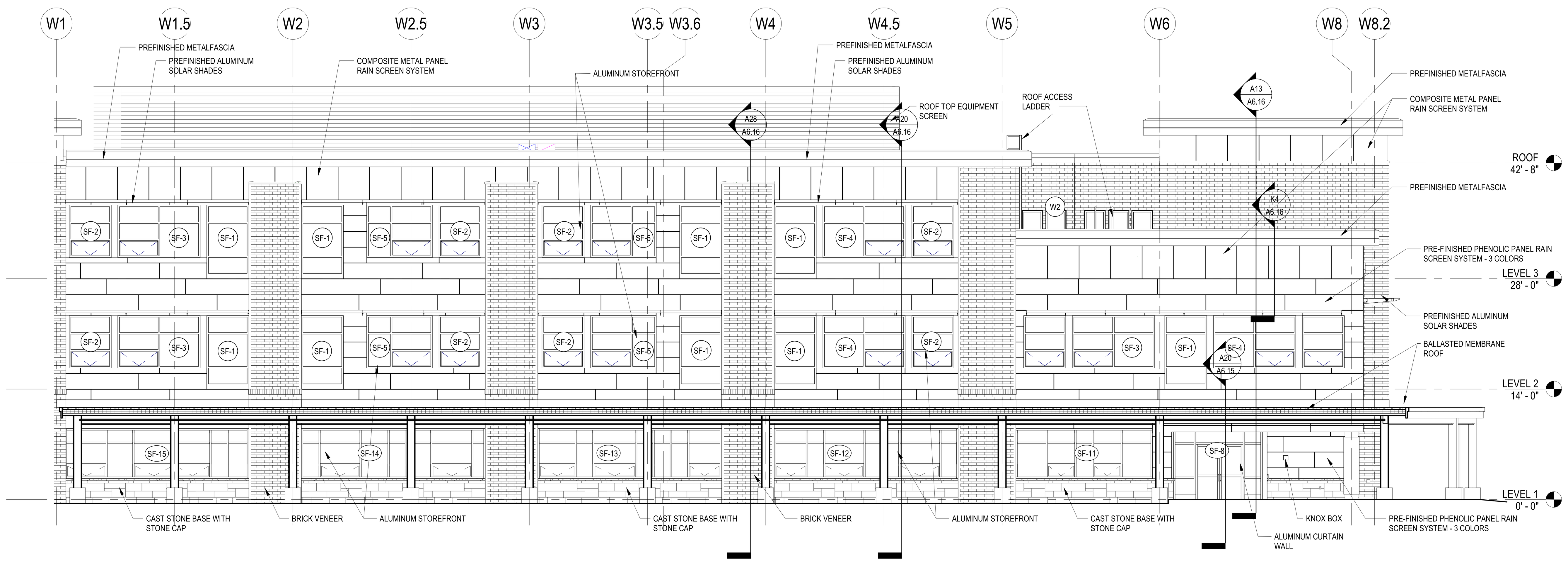

Q27 PARTIAL SOUTH ELEVATION 4
1/8" = 1'-0"



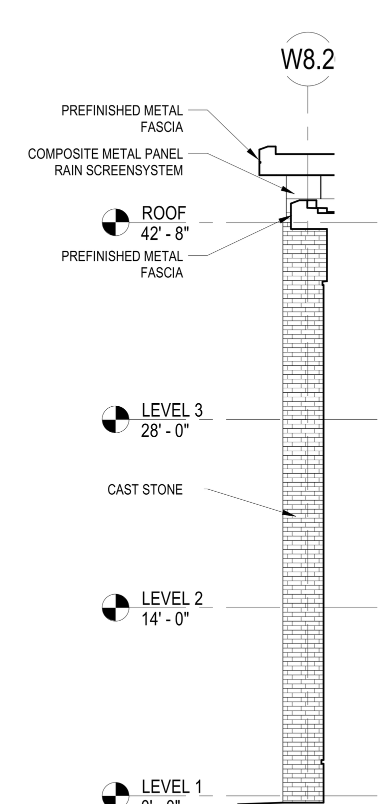

Q11 PARTIAL WEST ELEVATION 2
1/8" = 1'-0"



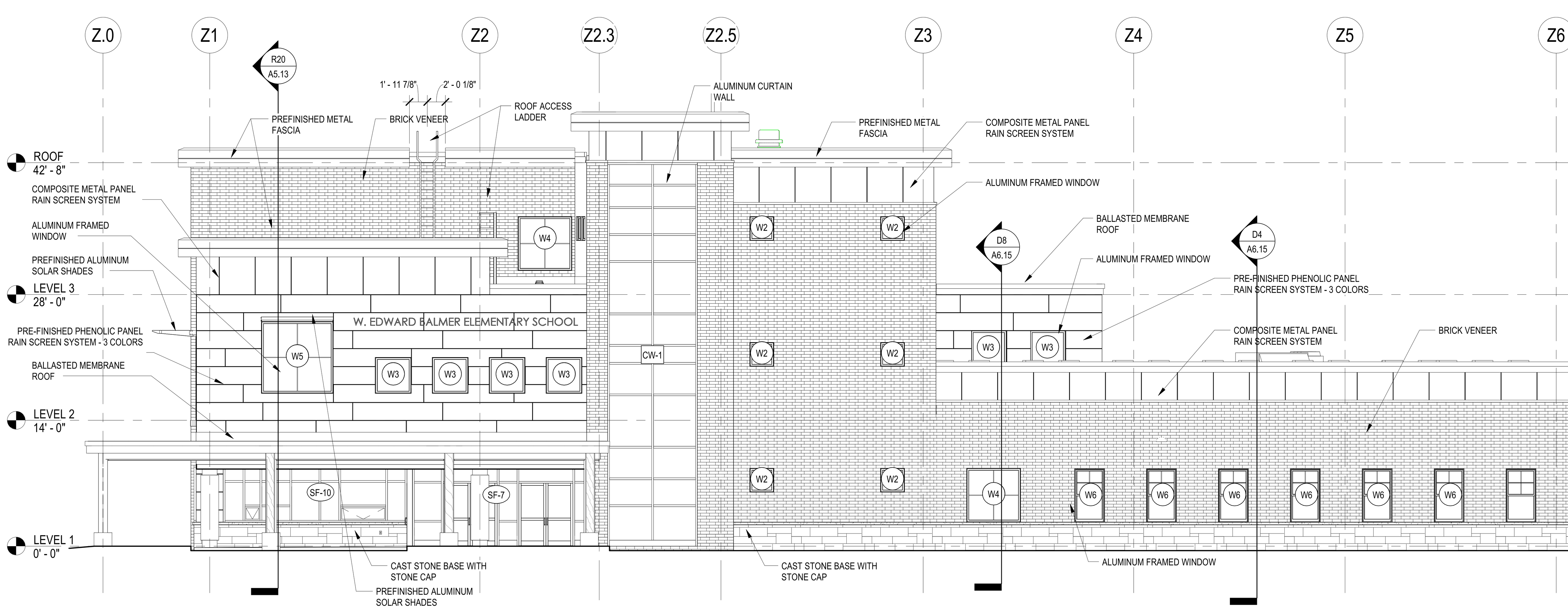

H26 SOUTH ELEVATION AT STAIR 2
1/8" = 1'-0"




H22 PARTIAL WEST ELEVATION 1
1/8" = 1'-0"




A23 WEST ELEVATION 6
1/8" = 1'-0"




A20 PARTIAL SOUTH ELEVATION 3
1/8" = 1'-0"

## EXTERIOR ELEVATION GENERAL NOTES

1. EXTERIOR ELEVATIONS ARE PROVIDED TO SHOW THE GENERAL ARRANGEMENT OF EXTERIOR WALL FINISH MATERIALS. REFER TO WALL SECTIONS AND DETAILS FOR DETAILED DESCRIPTION OF CONSTRUCTION.
2. LINE OF GRADE INDICATED IS APPROXIMATE – REFER TO CIVIL / LANDSCAPE GRADING PLANS FOR GRADING INFORMATION.
3. WHERE PORTIONS OF ELEVATIONS ARE OBSCURED FROM VIEW BY FREESTANDING COLUMNS, FASCIA, ROOF EDGES, OR OTHER PROJECTING CONSTRUCTION, THE CONTRACTOR SHALL ASSUME THAT THE ADJACENT WALL FINISHES EXTEND INTO THE AREAS OBSCURED FROM VIEW, UNLESS SPECIFICALLY INDICATED AS OTHERWISE IN BUILDING AND WALL SECTIONS.
4. DIMENSIONAL INFORMATION PROVIDED RELATIVE TO MASONRY VENEER IS BASED ON NOMINAL FULL INCH MASONRY COURSING.
5. REFER TO ROOF PLAN FOR DESCRIPTION OF ROOFING SYSTEMS AND MATERIALS.
6. REFER TO CURTAIN-WALL TYPES AND DETAILS FOR INFORMATION RELATED TO CURTAIN-WALL, GLAZING TYPES, INSTALLATION, AND TRIM AT OPENINGS.
7. REFER TO WINDOW TYPES AND DETAILS FOR INFORMATION RELATED TO WINDOWS, OPERABLE SASH, GLAZING TYPES, INSTALLATION, AND TRIM AT OPENINGS.
8. REFER TO LOUVER TYPES AND DETAILS FOR INFORMATION RELATED TO LOUVER OPENINGS, SIZES, INSTALLATION, AND TRIM AT OPENINGS.
9. REFER TO BUILDING AND WALL SECTIONS FOR HEIGHT OF MASONRY COURSING AND TOP OF MASONRY ELEVATIONS.
10. PROVIDE MASONRY VENEER CONTROL JOINTS WHERE INDICATED IN ELEVATIONS. IN ADDITION, PROVIDE CONTROL JOINTS AT THE FOLLOWING LOCATIONS:
    a. ON ONE SIDE OF AN OUTWARD BUILDING CORNER WITHIN 2'-4" OF THE CORNER.
    b. AT EACH INWARD BUILDING CORNER.
    c. WHERE THE HEIGHT OF THE FACADE MASONRY VENEER CHANGES.
    d. WHERE THE METHOD OF SUPPORT FOR MASONRY VENEER CHANGES, SUCH AS AT ENDS OF RELIEVING ANGLES OR STRUCTURAL LINTELS SUPPORTED FROM ROOF STRUCTURE.
    e. ON UNINTERRUPTED SPANS OF MASONRY VENEER AT MAXIMUM 24'-0" SPACING.
11. SEALANT AND BACKER ROD AT MASONRY VENEER CONTROL JOINTS SHALL BE PROVIDED AND INSTALLED BY THE WATERPROOFING / JOINT SEALANT SUB-CONTRACTOR.
12. WHERE LOOSE LINTELS CROSS CONTROL JOINTS, PROVIDE BOND-BREAK FABRIC WRAP OF LINTEL END AT PORTION OF LINTEL EXTENDING PAST CONTROL JOINT.
13. WHERE MASONRY VENEER MATERIAL CHANGES OCCUR, INCLUDING FROM BRICK TO CMU OR PRECAST CONCRETE, PROVIDE A BOND BREAK SEPARATOR BETWEEN COURSES.
14. ELEVATIONS MAY NOT SHOW ALL BUILDING FEATURES WITH CLARITY, SUCH AS REGLET COUNTER-FLASHINGS AND TERMINATION BARS WHERE ROOF MEMBRANE FLASHINGS TERMINATE ON SIDE WALLS. REFER TO WALL SECTION AND ROOF EDGE DETAILS FOR DETAILS AND INFORMATION RELATED TO THESE CONDITIONS.
15. PAINT ALL EXPOSED LINTELS TO MATCH ADJACENT WALL.

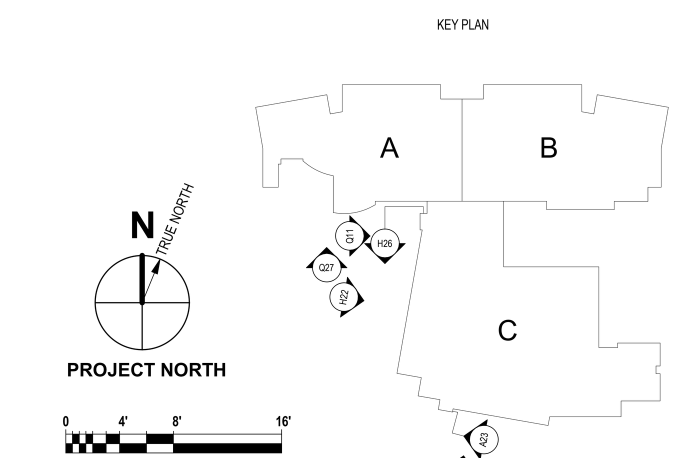
## EXTERIOR MATERIALS LEGEND

BRICK VENEER
EXISTING BRICK VENEER
METAL PANEL / MCM PANEL
EV-CMU
VERTICAL STANDING SEAM METAL PANEL SIDING
CONCRETE / CAST STONE PRE-CAST CONCRETE
PRE-FINISHED PHENOLIC PANEL RAIN SCREEN SYSTEM - 3 COLORS
LOUVER
VISION PANEL - OPERABLE

## EXTERIOR ELEVATION SYMBOLS LEGEND

CAM CAMERA; SEESECURITY DWGS
SPK SPEAKER; SEECOMMUNICATION DWGS
CR CARD READER; SEETECHNOLOGY DWGS
A1 VIDEO INTERCOM; SEE TECHNOLOGY DWGS
DO VIDEO INTERCOM; SEE TECHNOLOGY DWGS
H/S FIRE ALARM HORN/STROBE; SEE FIRE ALARM DWGS
FA RED FIRE ALARM BEACON; SEEFIRE ALARM DWGS
SEC AMBER SECURITY BEACON; SEE FIRE ALARM AND TECHNOLOGY DRAWINGS
SPR SPRINKLER ALARM BEACON AND BELL; SEEFIRE ALARM DWGS
H HOSE BIB; SEE PLUMBING DWGS
PENDANT MOUNT LIGHT FIXTURE, SEE ELEC. DWGS. LOCATE SL4 AT 8'-0" ABOVE LEVEL 1 TO B.O. FIXTURE. LOCATE SL5 AT 14'-0" ABOVE LEVEL 1 TO B.O. FIXTURE.
WALL SCONCE LIGHT FIXTURE, SEE ELEC. DWGS. LOCATE LEVEL 1 SC1 AT 7'-8" ABOVE LEVEL 1 TO B.O. FIXTURE. LOCATE LEVEL 2 SC-1 AT 4'-0" ABOVE LEVEL 2 TO B.O. FIXTURE
+ 3/4" EXTENT OF BRICK VENEER PROJECTING BEYOND THE DATUM FACE OF BRICK VENEER PLANE. SEE PROJECT DETAILS AND SPECIAL BRICK SHAPES FOR ASSEMBLIES

KEY PLAN

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Planning Board Submission

| REVISION: | Date: |
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DATE: 04/09/2019
SCALE: 1/8" = 1'-0"

SHEET TITLE: EXTERIOR ELEVATIONS

SHEET #: A4.11

ARCH - 759 - BALMER ELEMENTARY_detached.rvt
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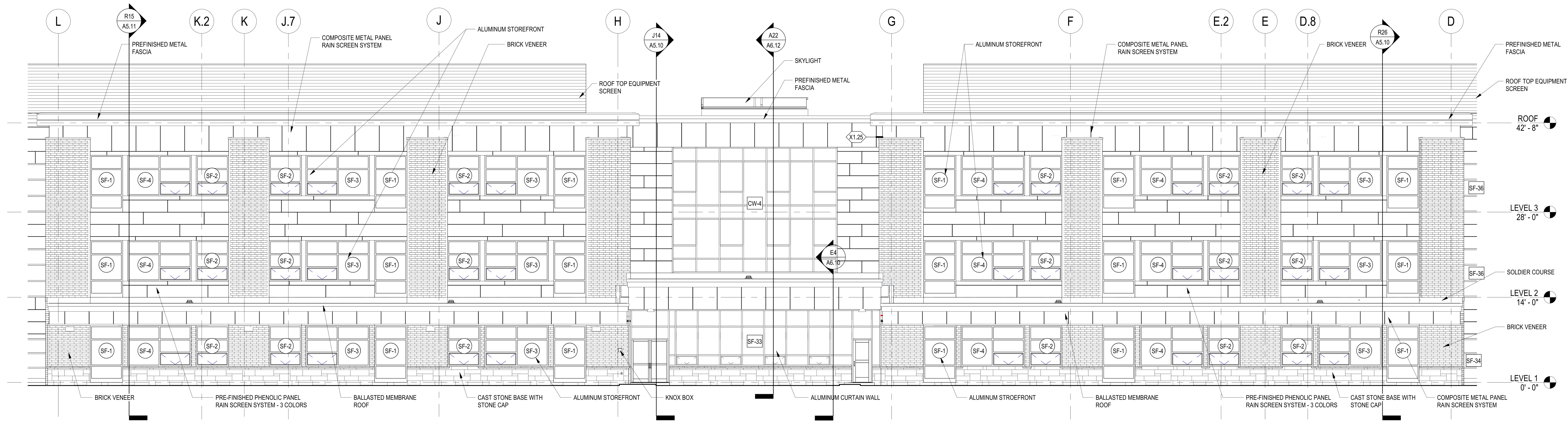
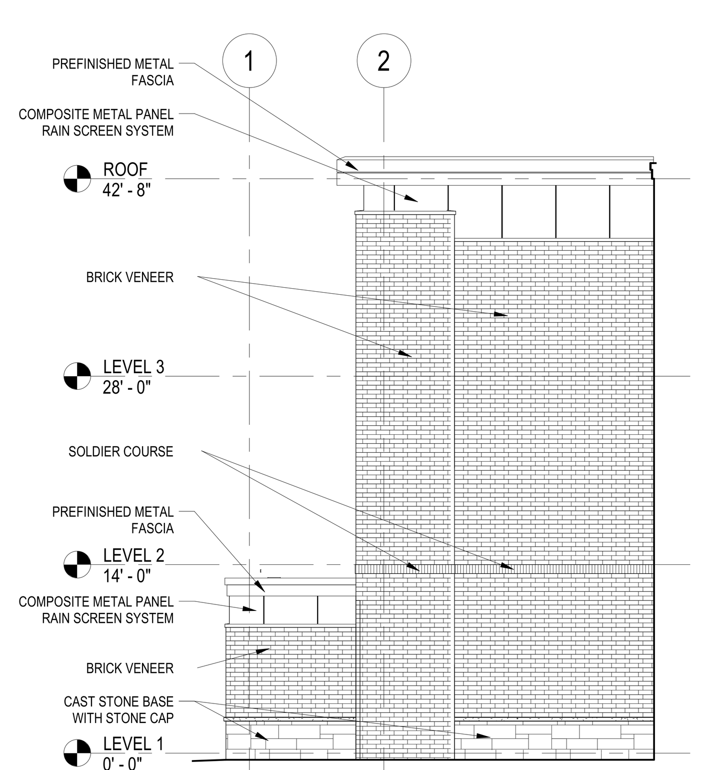
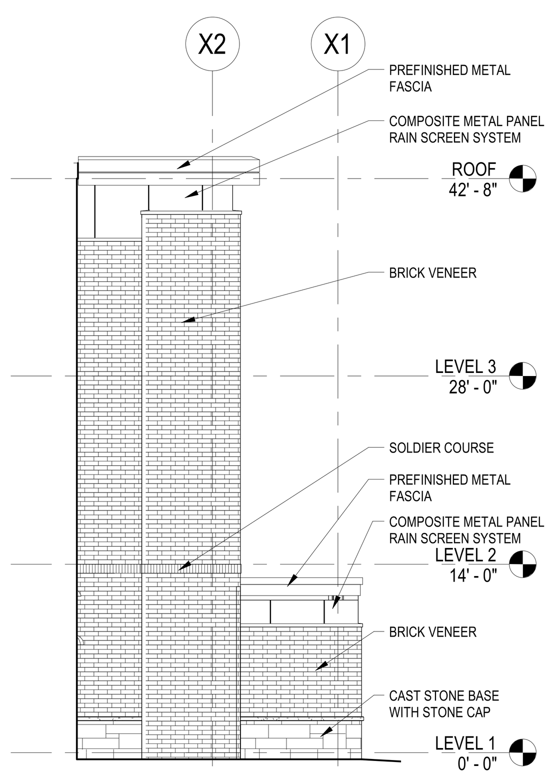


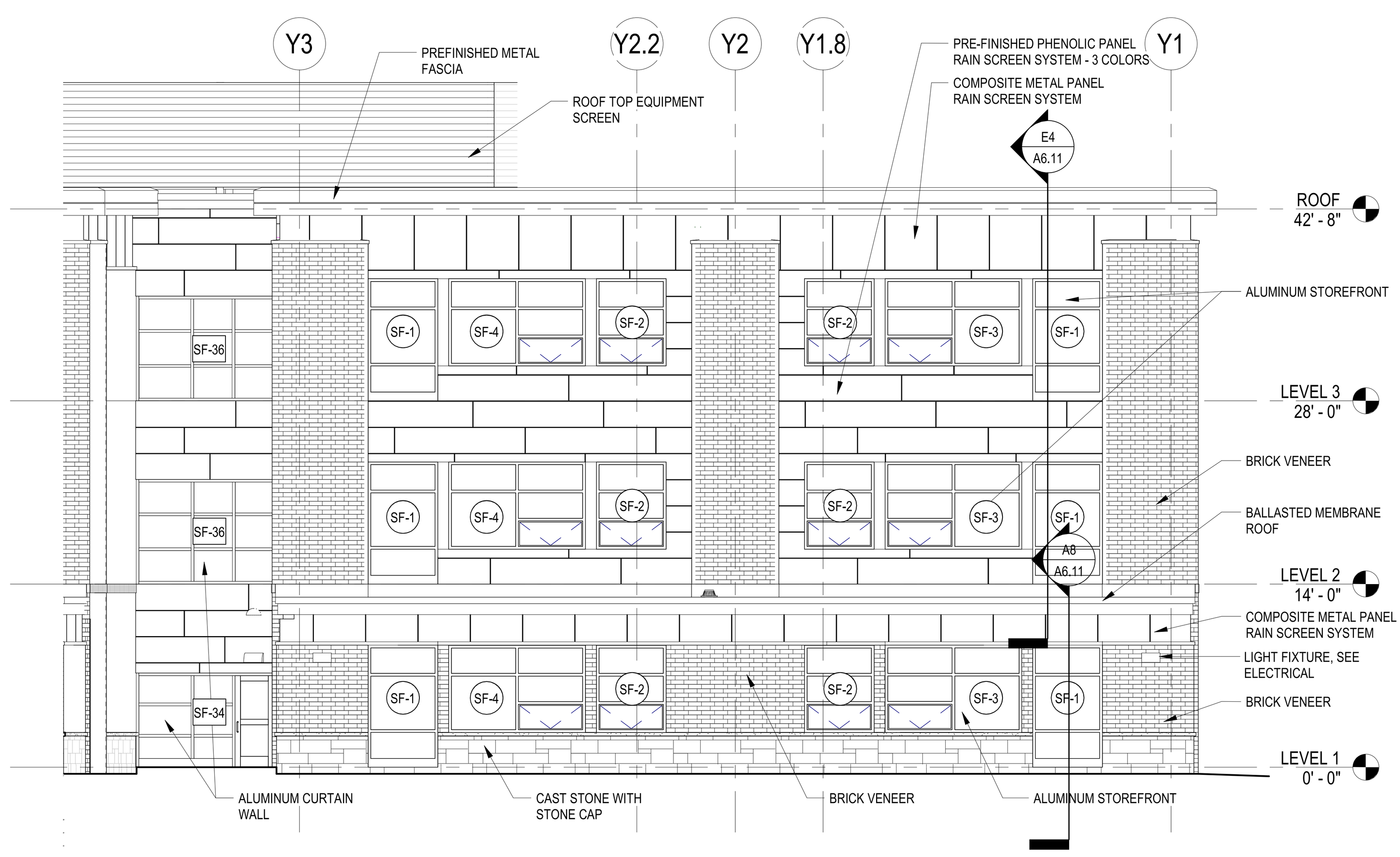

Q27 PARTIAL NORTH ELEVATION 2
1/8" = 1'-0"



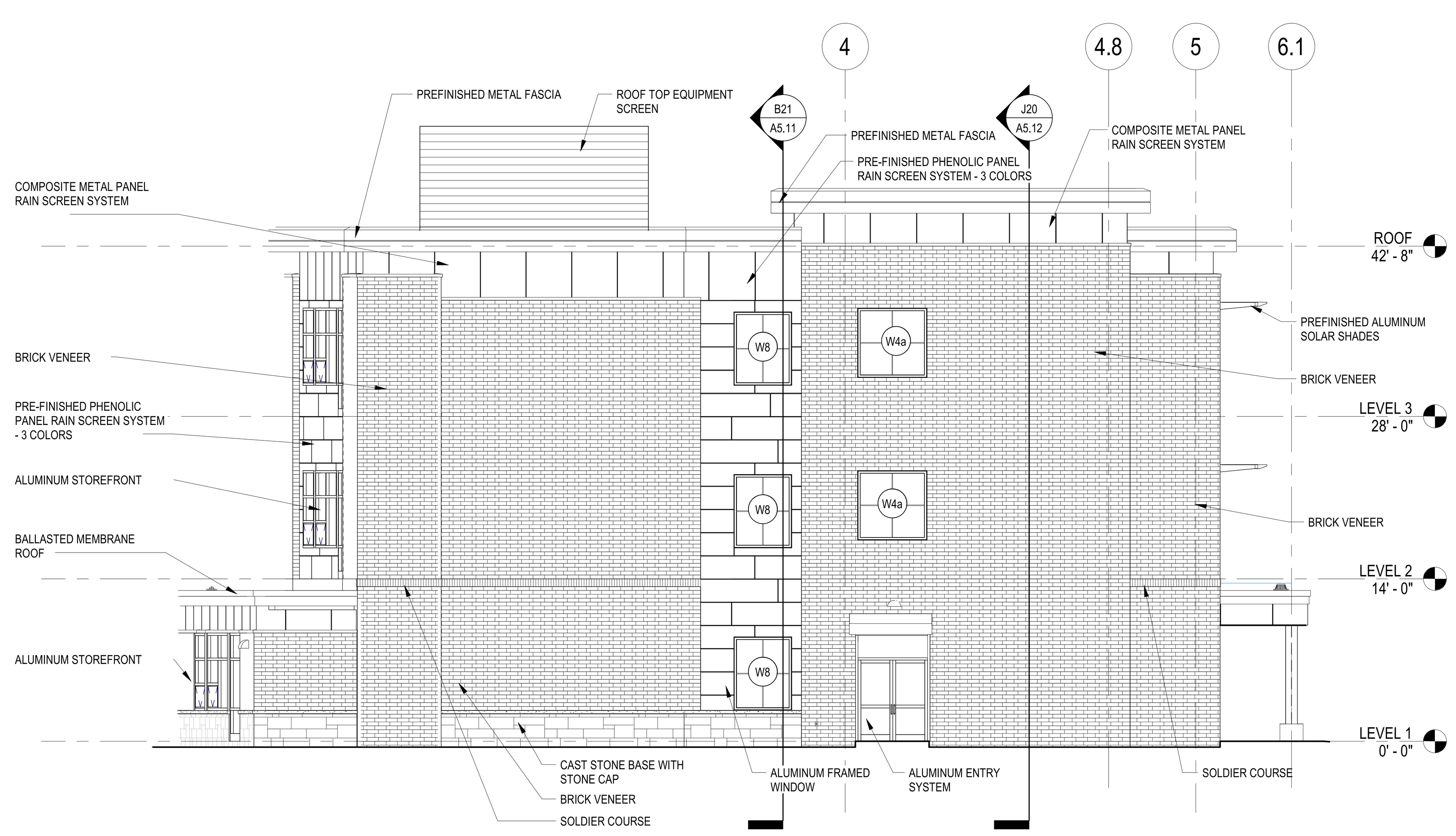

H25 EAST ELEVATION 1
1/8" = 1'-0"



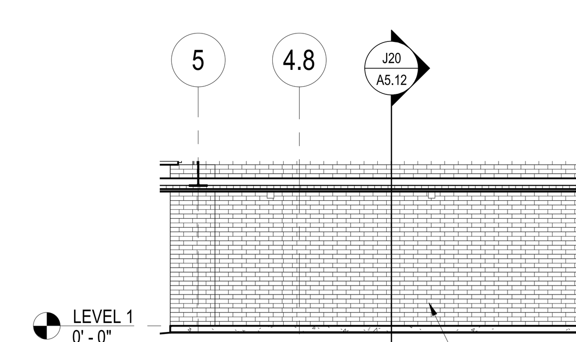

H19 WEST ELEVATION 1
1/8" = 1'-0"



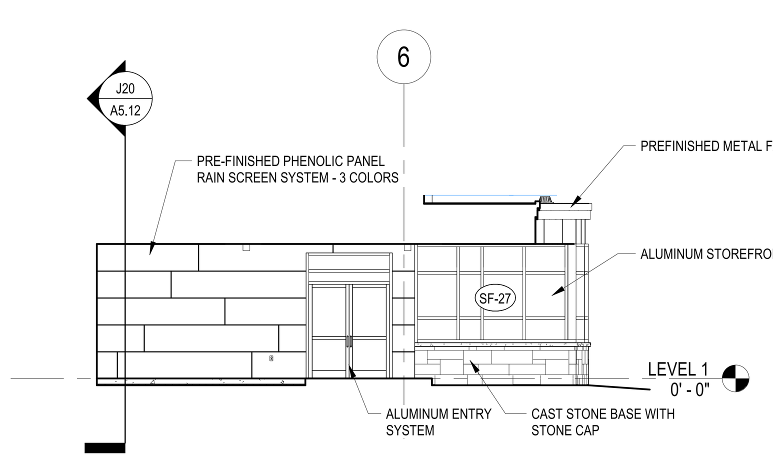

H15 PARTIAL NORTH ELEVATION 1
1/8" = 1'-0"



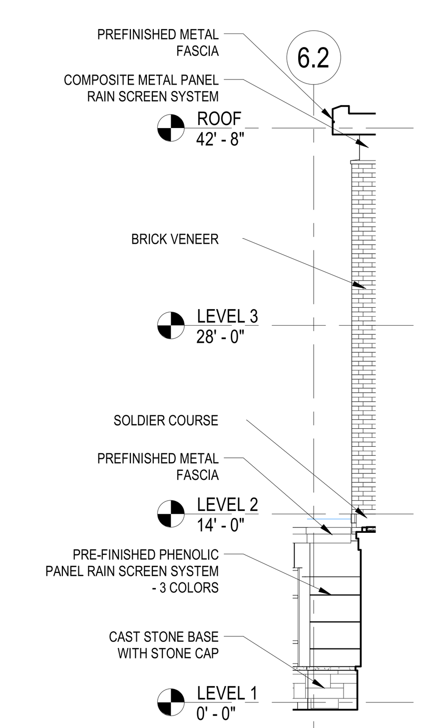

A27 PARTIAL WEST ELEVATION 4
1/8" = 1'-0"




A16 PARTIAL EAST ELEVATION 5
1/8" = 1'-0"




A12 PARTIAL WEST ELEVATION 3
1/8" = 1'-0"




A7 WEST ELEVATION AT MEDIA CENTER
1/8" = 1'-0"

SCALE: 1/8"=1'-0" GRAPHIC SCALE

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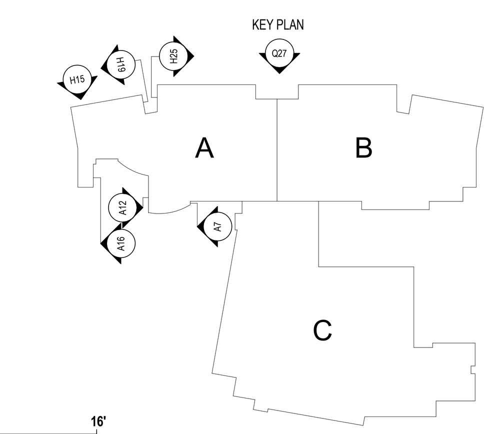
## EXTERIOR MATERIALS LEGEND

- BRICK VENEER
- EXISTING BRICK VENEER
- METAL PANEL / MCM PANEL
- EV-CMU
- VERTICAL STANDING SEAM METAL PANEL SIDING
- CONCRETE / CAST STONE PRE-CAST CONCRETE
- PRE-FINISHED PHENOLIC PANEL RAIN SCREEN SYSTEM - 3 COLORS
- LOUVER
- VISION PANEL - OPERABLE

## EXTERIOR ELEVATION SYMBOLS LEGEND

- CAM — CAMERA; SEESECURITY DWGS
- SPK — SPEAKER; SEECOMMUNICATION DWGS
- CR — CARD READER; SEETECHNOLOGY DWGS
- A1 — VIDEO INTERCOM; SEE TECHNOLOGY DWGS
- DO — VIDEO INTERCOM; SEE TECHNOLOGY DWGS
- H/S — FIRE ALARM HORN/STROBE; SEE FIRE ALARM DWGS
- FA — RED FIRE ALARM BEACON; SEEFIRE ALARM DWGS
- SEC — AMBER SECURITY BEACON; SEE FIRE ALARM AND TECHNOLOGY DRAWINGS
- SPR — SPRINKLER ALARM BEACON AND BELL; SEEFIRE ALARM DWGS
- H — HOSE BIB; SEE PLUMBING DWGS
- PENDANT MOUNT LIGHT FIXTURE, SEE ELEC. DWGS. LOCATE SL4 AT 8'-0" ABOVE LEVEL 1 TO B.O. FIXTURE. LOCATE SL5 AT 14'-0" ABOVE LEVEL 1 TO B.O. FIXTURE.
- WALL SCONCE LIGHT FIXTURE, SEE ELEC. DWGS. LOCATE LEVEL 1 SC1 AT 7'-8" ABOVE LEVEL 1 TO B.O. FIXTURE. LOCATE LEVEL 2 SC-1 AT 4'-0" ABOVE LEVEL 2 TO B.O. FIXTURE
- + 3/4" — EXTENT OF BRICK VENEER PROJECTING BEYOND THE DATUM FACE OF BRICK VENEER PLANE. SEE PROJECT DETAILS AND SPECIAL BRICK SHAPES FOR ASSEMBLIES

KEY PLAN





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**Planning Board Submission**

| REVISION: | Date: |
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DATE: 04/09/2019
SCALE: 1/8" = 1'-0"

SHEET TITLE: EXTERIOR ELEVATIONS

SHEET #: **A4.12**

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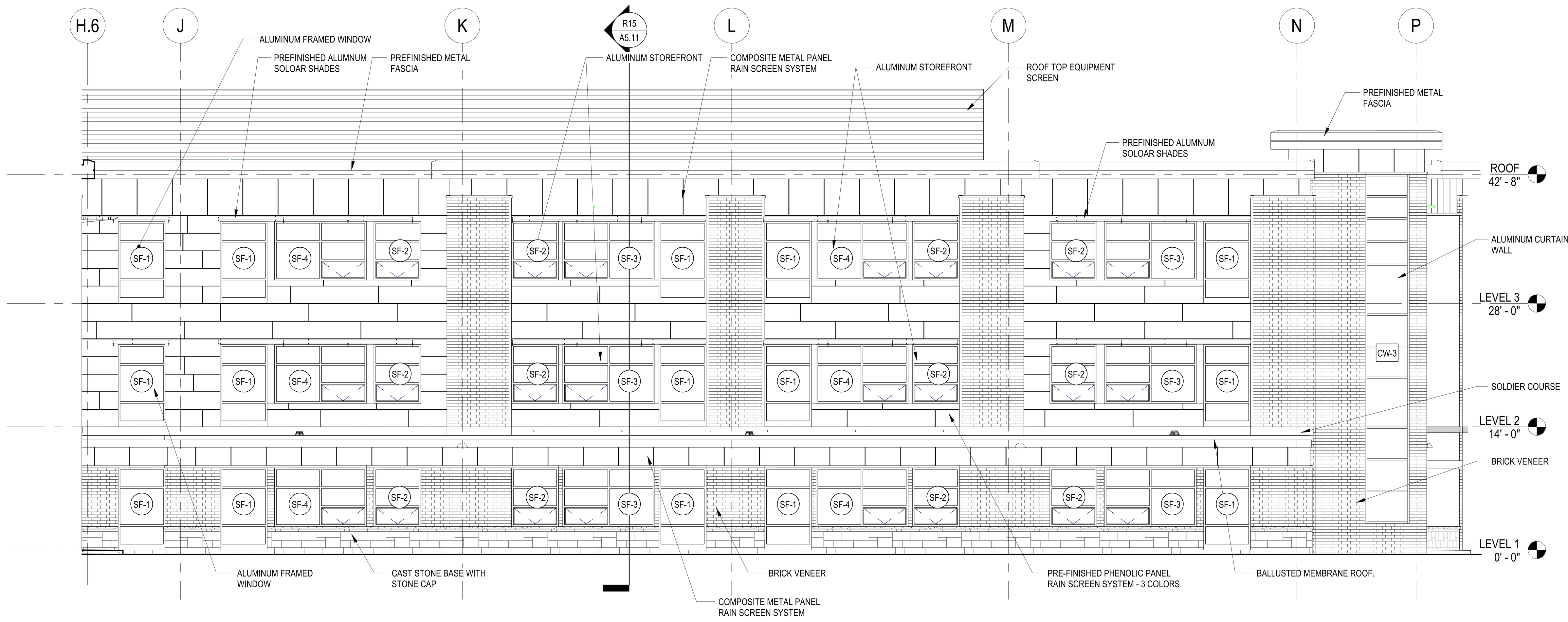
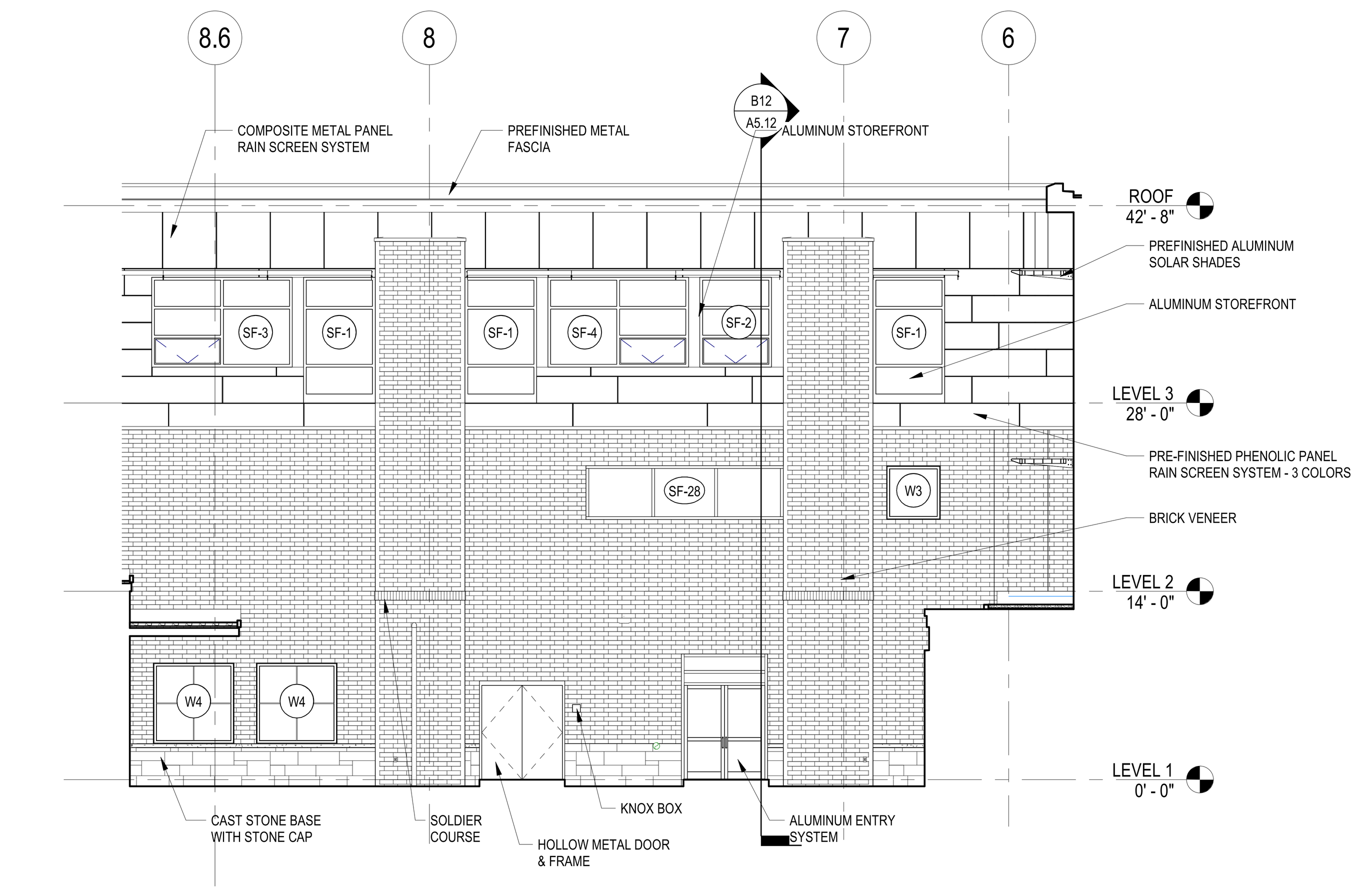
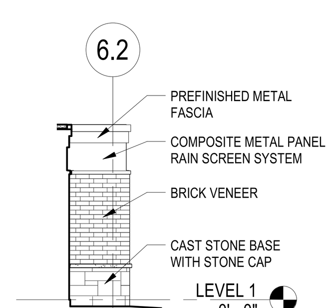
4/3/2019 2:43:40 PM



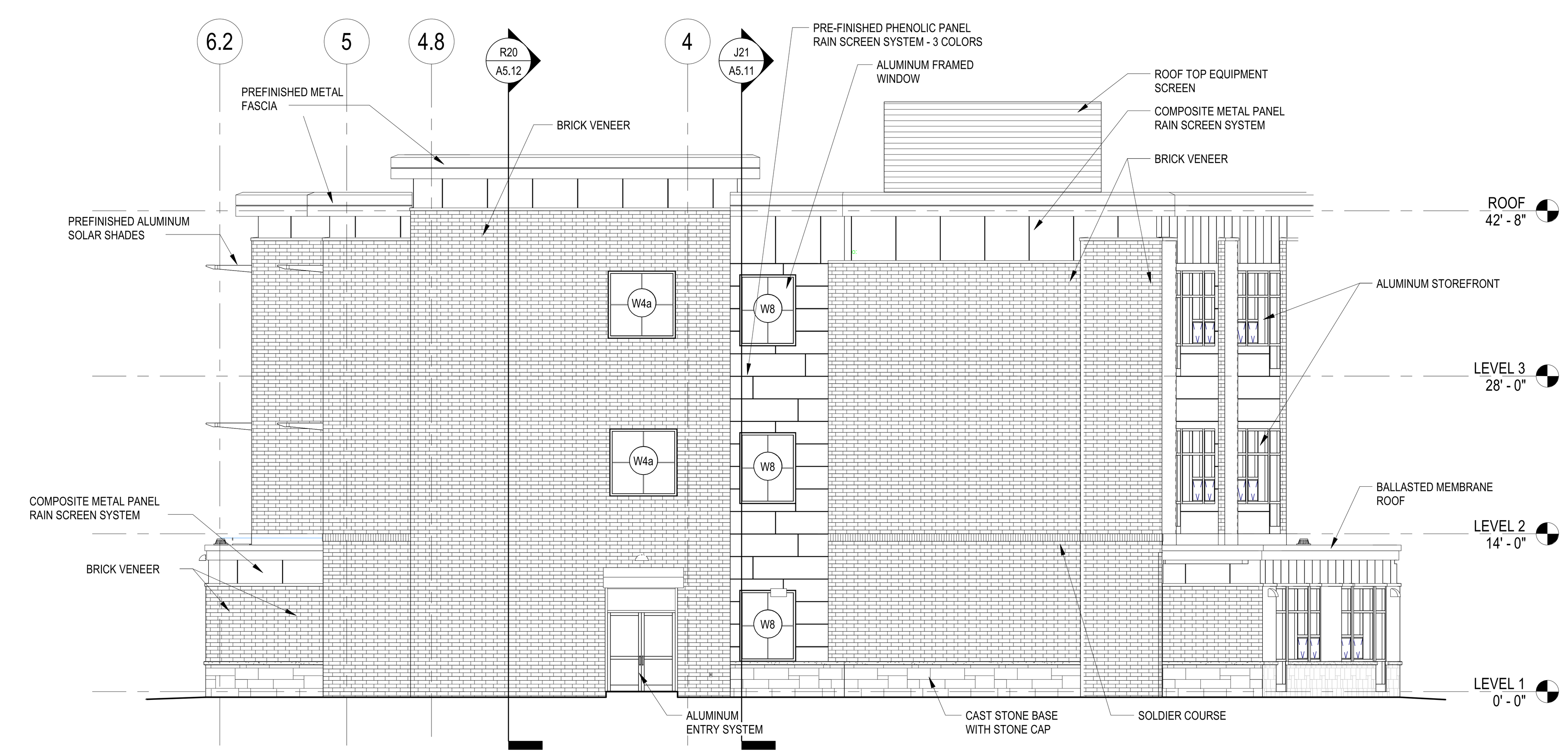
Q20 PARTIAL SOUTH ELEVATION 1
1/8" = 1'-0"



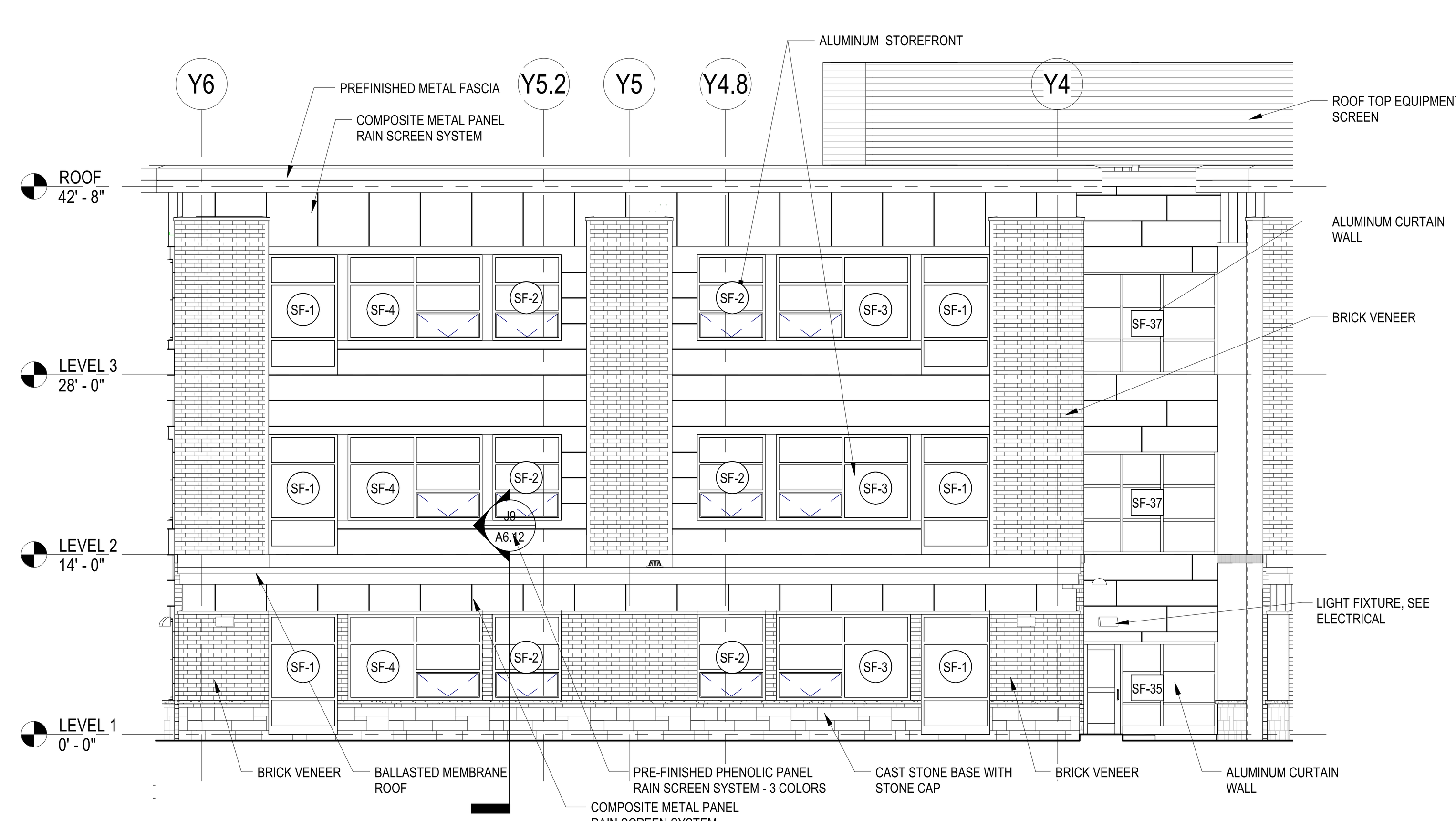
H27 PARTIAL EAST ELEVATION 2
1/8" = 1'-0"



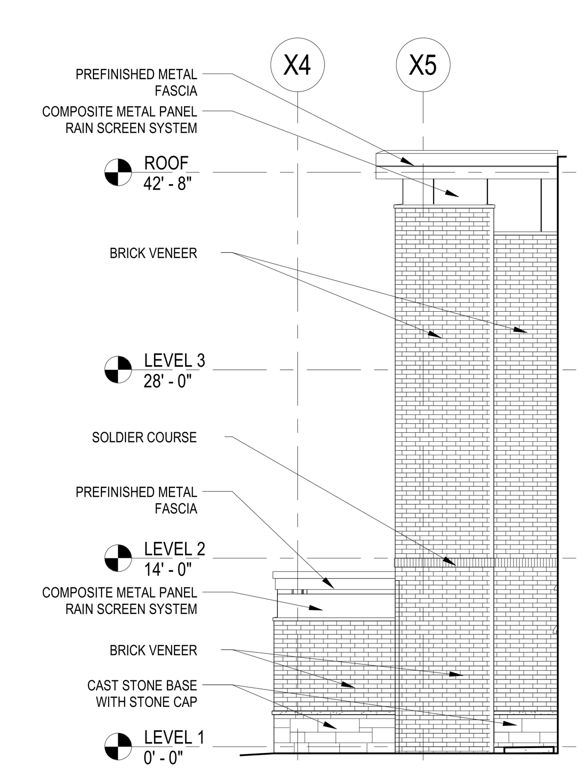
H19 EAST ELEVATION 4
1/8" = 1'-0"



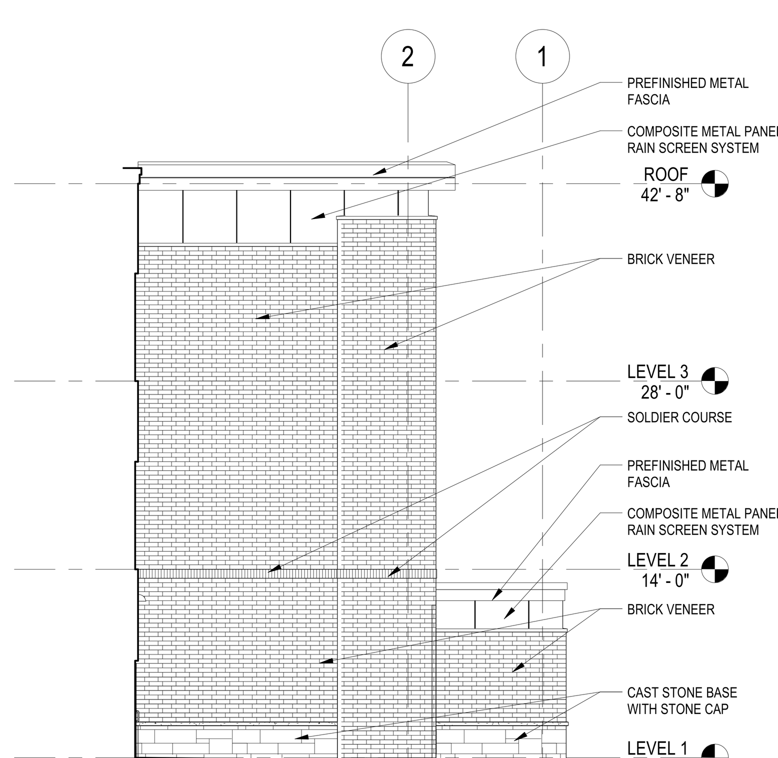
H16 PARTIAL EAST ELEVATION 1
1/8" = 1'-0"



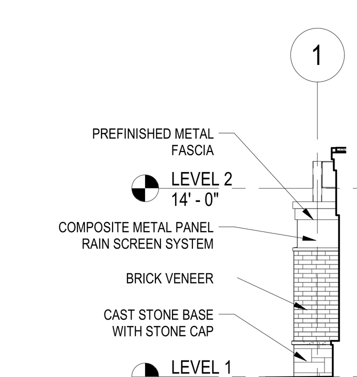
A28 PARTIAL NORTH ELEVATION 3
1/8" = 1'-0"



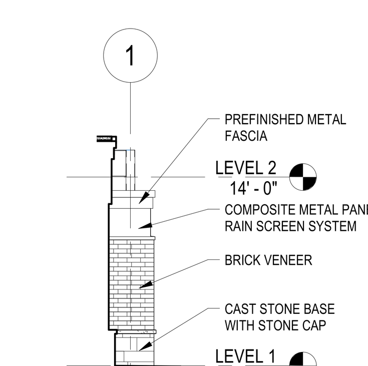
A18 EAST ELEVATION 3
1/8" = 1'-0"



A14 WEST ELEVATION 3
1/8" = 1'-0"



A9 EAST ELEVATION 2
1/8" = 1'-0"



A6 WEST ELEVATION 2
1/8" = 1'-0"

SCALE: 1/8"=1'-0" GRAPHIC SCALE

## EXTERIOR ELEVATION GENERAL NOTES

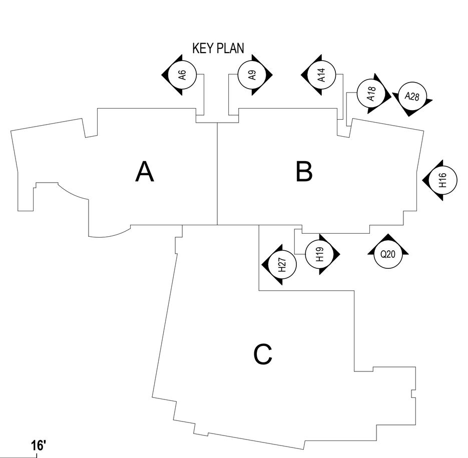
1. EXTERIOR ELEVATIONS ARE PROVIDED TO SHOW THE GENERAL ARRANGEMENT OF EXTERIOR WALL FINISH MATERIALS. REFER TO WALL SECTIONS AND DETAILS FOR DETAILED DESCRIPTION OF CONSTRUCTION.
2. LINE OF GRADE INDICATED IS APPROXIMATE – REFER TO CIVIL / LANDSCAPE GRADING PLANS FOR GRADING INFORMATION.
3. WHERE PORTIONS OF ELEVATIONS ARE OBSCURED FROM VIEW BY FREESTANDING COLUMNS, FASCIA, ROOF EDGES, OR OTHER PROJECTING CONSTRUCTION, THE CONTRACTOR SHALL ASSUME THAT THE ADJACENT WALL FINISHES EXTEND INTO THE AREAS OBSCURED FROM VIEW, UNLESS SPECIFICALLY INDICATED AS OTHERWISE IN BUILDING AND WALL SECTIONS.
4. DIMENSIONAL INFORMATION PROVIDED RELATIVE TO MASONRY VENEER IS BASED ON NOMINAL FULL INCH MASONRY COURSING.
5. REFER TO ROOF PLAN FOR DESCRIPTION OF ROOFING SYSTEMS AND MATERIALS.
6. REFER TO CURTAIN-WALL TYPES AND DETAILS FOR INFORMATION RELATED TO CURTAIN-WALL, GLAZING TYPES, INSTALLATION, AND TRIM AT OPENINGS.
7. REFER TO WINDOW TYPES AND DETAILS FOR INFORMATION RELATED TO WINDOWS, OPERABLE SASH, GLAZING TYPES, INSTALLATION, AND TRIM AT OPENINGS.
8. REFER TO LOUVER TYPES AND DETAILS FOR INFORMATION RELATED TO LOUVER OPENINGS, SIZES, INSTALLATION, AND TRIM AT OPENINGS.
9. REFER TO BUILDING AND WALL SECTIONS FOR HEIGHT OF MASONRY COURSING AND TOP OF MASONRY ELEVATIONS.
10. PROVIDE MASONRY VENEER CONTROL JOINTS WHERE INDICATED IN ELEVATIONS. IN ADDITION, PROVIDE CONTROL JOINTS AT THE FOLLOWING LOCATIONS:
    a. ON ONE SIDE OF AN OUTWARD BUILDING CORNER WITHIN 2'-4" OF THE CORNER.
    b. AT EACH INWARD BUILDING CORNER.
    c. WHERE THE HEIGHT OF THE FACADE MASONRY VENEER CHANGES.
    d. WHERE THE METHOD OF SUPPORT FOR MASONRY VENEER CHANGES, SUCH AS AT ENDS OF RELIEVING ANGLES OR STRUCTURAL LINTELS SUPPORTED FROM ROOF STRUCTURE.
    e. ON UNINTERRUPTED SPANS OF MASONRY VENEER AT MAXIMUM 24'-0" SPACING.
11. SEALANT AND BACKER ROD AT MASONRY VENEER CONTROL JOINTS SHALL BE PROVIDED AND INSTALLED BY THE WATERPROOFING / JOINT SEALANT SUB-CONTRACTOR.
12. WHERE LOOSE LINTELS CROSS CONTROL JOINTS, PROVIDE BOND-BREAK FABRIC WRAP OF LINTEL END AT PORTION OF LINTEL EXTENDING PAST CONTROL JOINT.
13. WHERE MASONRY VENEER MATERIAL CHANGES OCCUR, INCLUDING FROM BRICK TO CMU OR PRECAST CONCRETE, PROVIDE A BOND BREAK SEPARATOR BETWEEN COURSES.
14. ELEVATIONS MAY NOT SHOW ALL BUILDING FEATURES WITH CLARITY, SUCH AS REGLET COUNTER-FLASHINGS AND TERMINATION BARS WHERE ROOF MEMBRANE FLASHINGS TERMINATE ON SIDE WALLS. REFER TO WALL SECTION AND ROOF EDGE DETAILS FOR DETAILS AND INFORMATION RELATED TO THESE CONDITIONS.
15. PAINT ALL EXPOSED LINTELS TO MATCH ADJACENT WALL.

## EXTERIOR MATERIALS LEGEND

BRICK VENEER
CONCRETE / CAST STONE PRE-CAST CONCRETE
EXISTING BRICK VENEER
PRE-FINISHED PHENOLIC PANEL RAIN SCREEN SYSTEM - 3 COLORS
METAL PANEL / MCM PANEL
LOUVER
EV-CMU
VISION PANEL - OPERABLE
VERTICAL STANDING SEAM METAL PANEL SIDING

## EXTERIOR ELEVATION SYMBOLS LEGEND

CAM CAMERA; SEESECURITY DWGS
H/S FIRE ALARM HORN/STROBE; SEE FIRE ALARM DWGS
SPK SPEAKER; SEECOMMUNICATION DWGS
FA RED FIRE ALARM BEACON; SEEFIRE ALARM DWGS
CR CARD READER; SEETECHNOLOGY DWGS
SEC AMBER SECURITY BEACON; SEE FIRE ALARM AND TECHNOLOGY DRAWINGS
A1 VIDEO INTERCOM; SEE TECHNOLOGY DWGS
SPR SPRINKLER ALARM BEACON AND BELL; SEEFIRE ALARM DWGS
DO VIDEO INTERCOM; SEE TECHNOLOGY DWGS
H HOSE BIB; SEE PLUMBING DWGS
PENDANT MOUNT LIGHT FIXTURE, SEE ELEC. DWGS. LOCATE SL4 AT 8'-0" ABOVE LEVEL 1 TO B.O. FIXTURE. LOCATE SL5 AT 14'-0" ABOVE LEVEL 1 TO B.O. FIXTURE.
WALL SCONCE LIGHT FIXTURE, SEE ELEC. DWGS. LOCATE LEVEL 1 SC1 AT 7'-8" ABOVE LEVEL 1 TO B.O. FIXTURE. LOCATE LEVEL 2 SC-1 AT 4'-0" ABOVE LEVEL 2 TO B.O. FIXTURE
+ 3/4" EXTENT OF BRICK VENEER PROJECTING BEYOND THE DATUM FACE OF BRICK VENEER PLANE. SEE PROJECT DETAILS AND SPECIAL BRICK SHAPES FOR ASSEMBLIES





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Project No. 17-759

# W. EDWARD BALMER ELEMENTARY SCHOOL

21 CRESCENT STREET
WHITINSVILLE, MA 01588



Planning Board Submission

| REVISION: | Date: |
|---|---|

DATE: 04/09/2019
SCALE: 1/8" = 1'-0"

SHEET TITLE: EXTERIOR ELEVATIONS

SHEET #: A4.13

ARCH - 759 - BALMER ELEMENTARY_detached.rvt
4/3/2019 2:44:35 PM


1 LC1.0 ELECTRICAL SITE PLAN - PBP
SCALE: 1" = 40'-0"

SITE LIGHTING FIXTURE "SL1/3", "SL1/3H", AND "SL2/3"


SITE LIGHTING FIXTURE "SL3/4"


BUILDING MOUNTED FIXTURES "SL4" AND "SL5"

CANOPY MOUNTED FIXTURES "SLV4"

## LIGHTING FIXTURE SCHEDULE

| TYPE | MANUFACTURER | MODEL / SERIES | LLF | MTG. | MTG. HEIGHT | LUMENS | WATTS | TYPE | DESCRIPTION |
|---|---|---|---|---|---|---|---|---|---|
| SL1/3 | US ARCHITECTURAL | RZR-M SERIES | 0.80 | POLE | 20' | 5405 | 41.7 | LED/4000K | SINGLE AREA FULL CUTOFF LIGHT FIXTURE WITH TYPE III OPTICS |
| SL1/3H | US ARCHITECTURAL | RZR-M SERIES | 0.80 | POLE | 20' | 5405 | 41.7 | LED/4000K | SINGLE AREA FULL CUTOFF LIGHT FIXTURE WITH TYPE III OPTICS AND SHARP BACKLIGHT CUTOFF |
| SL2/3 | US ARCHITECTURAL | RZR-M SERIES | 0.80 | POLE | 20' | 10,810 | 83 | LED/4000K | DUAL AREA FULL CUTOFF LIGHT FIXTURE WITH TYPE III OPTICS |
| SL3/4 | US ARCHITECTURAL | RZR-PT2 SERIES | 0.80 | POLE | 16' | 6000 | 45 | LED/4000K | SINGLE AREA LIGHT FIXTURE WITH TYPE V OPTICS |
| SL4, SL5 | US ARCHITECTURAL | RZR-WM1 SERIES | 0.80 | BLDG | 12' | 2993 | 22 | LED/4000K | WALL MOUNTED LED SCONCE WITH TYPE III DISTRIBUTION |
| SLV4 | BIRCHWOOD | VANESSA SERIES | 0.80 | REC. | 12' | 4,000 | 36 | LED/4000K | RECESSED WET LOCATION LINEAR FIXTURE |

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508 - 998 - 5700 FAX 508 - 998 - 0883 E - MAIL info@g - g - d . com

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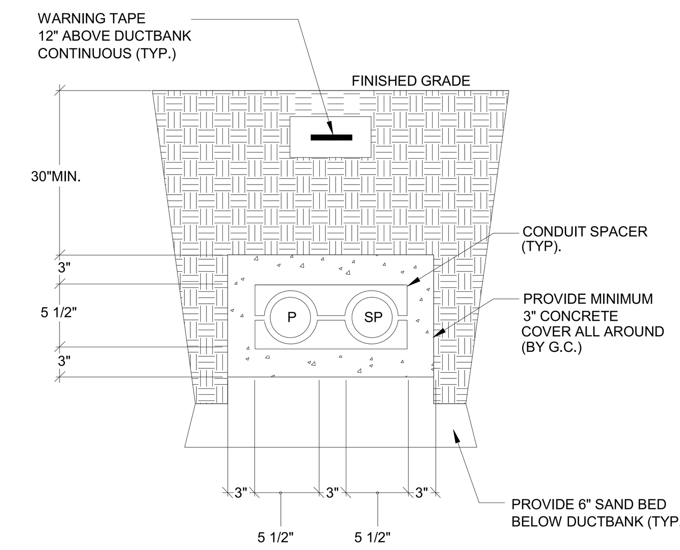
DATE: 04/09/2019
SCALE: 1" = 40'-0"

SHEET TITLE:
SITE LIGHTING CALCULATION PLAN

SHEET #:
LC1.0

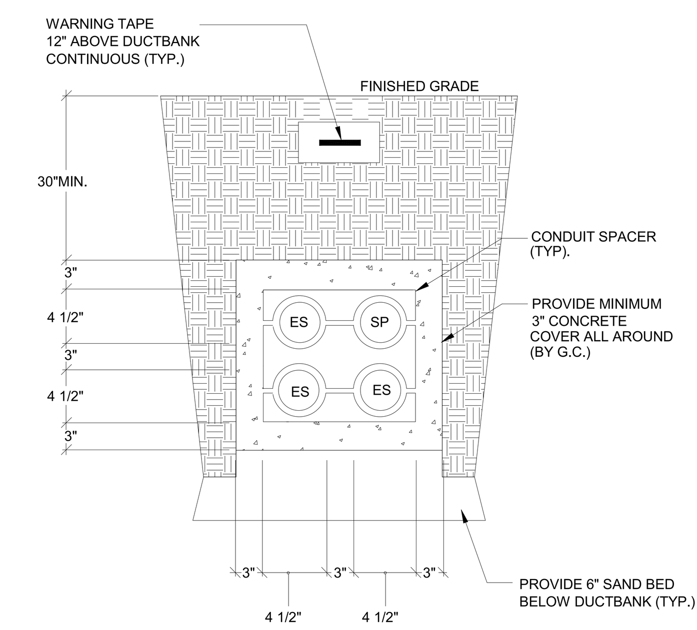



1 E0.04 PRIMARY DUCT BANK SECTION "A-A"

SCALE: N.T.S.

P 5" PRIMARY- SCHEDULE 40 P.V.C. PROVIDE PULL LINE IN CONDUIT.

SP 5" SPARE - SCHEDULE 40 P.V.C. PROVIDE PULL LINE IN CONDUIT.

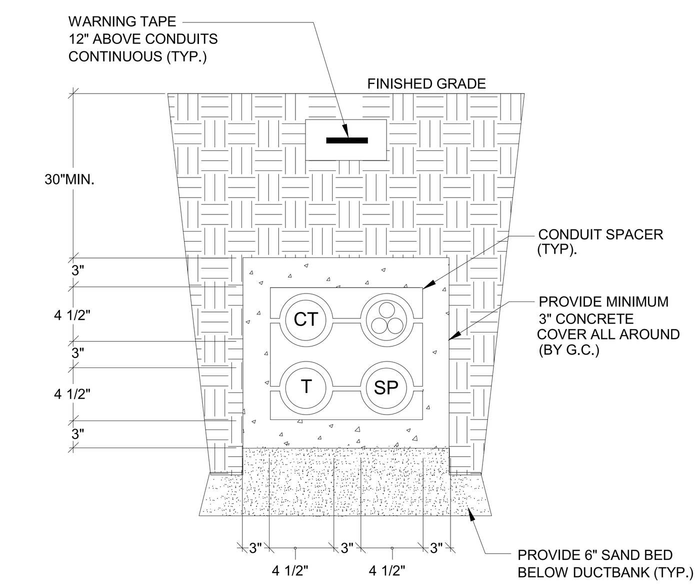



2 E0.04 SECONDARY DUCT BANK SECTION "B-B"

SCALE: N.T.S.

ES 4" SECONDARY- SCHEDULE 40 P.V.C.

SP 4" SPARE - SCHEDULE 40 P.V.C. PROVIDE PULL LINE.




3 E0.04 DUCT-BANK DETAIL "C-C"

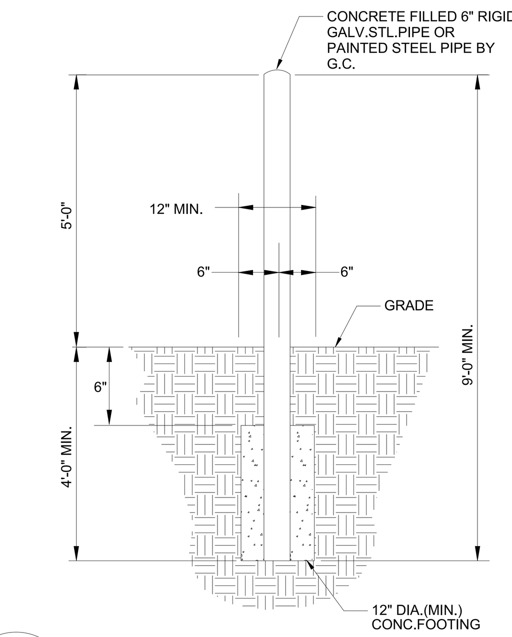
SCALE: N.T.S.

CT 4" CABLE TV - SCHEDULE 40 P.V.C. PROVIDE PULL LINE IN CONDUIT.

SP 4" SPARE - SCHEDULE 40 P.V.C. PROVIDE PULL LINE IN CONDUIT.

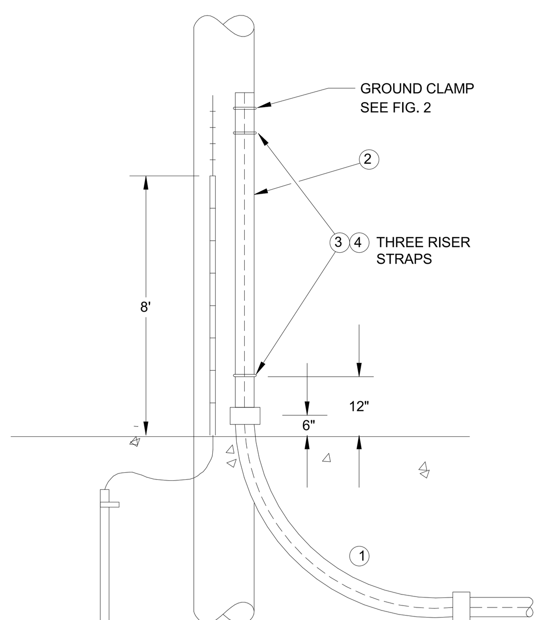
T 4" TELEPHONE - SCHEDULE 40 P.V.C. PROVIDE PULL LINE IN CONDUIT.

4" FIBER - SCHEDULE 40 P.V.C. (3) 1 1/4" INNER DUCTS FOR FIBER




4 E0.04 TYPICAL BOLLARD DETAIL

-NTS-




| CODE NUMBERS FOR PIPE SIZES OF: | |
|---|---|
| ITEM | DESCRIPTION |
| 1 | 3' RADIUS |
| 2 | CONDUIT-10' GALVANIZED STEEL |
| 3 | RISER STRAPS |
| 4 | LAG SCREWS 3/8" x 3" |
| 5 | RISER PIPE CONNECTOR |
| 6 | #6 COPPER SOLID BARE (24" LONG) |

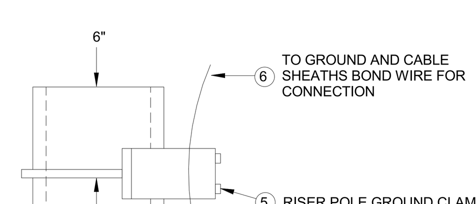



FIGURE 2 - RISER GROUND CLAMP

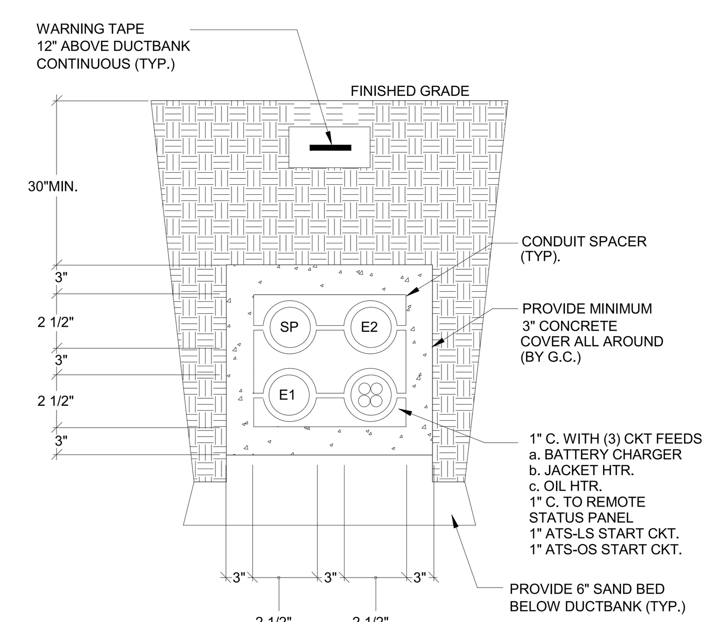
NOTES:

1. RISER CONDUITS SHALL BE LOCATED ON THE STREET QUARTER OF THE POLE, AND, WHEN POSSIBLE ON THE QUARTER AWAY FROM APPROACHING TRAFFIC.
2. SPARE CONDUIT SHALL BE CAPPED 6" ABOVE GRADE.

INSTALL GROUND CLAMP AS SHOWN. CONNECT TO POLE EQUIPMENT GROUNDING CONDUCTOR. INSTALL GROUND ROD AND RUN MINIMUM #6 SOLID COPPER UP POLE AND CONNECT TO COMMON NEUTRAL. INSTALL 8 FEET OF MOULDING OVER WIRE AND CONNECT RISER GROUND CLAMP TO GROUND WIRE ABOVE MOULDING AS SHOWN.

5 E0.04 POLE RISER DETAIL

-NTS-



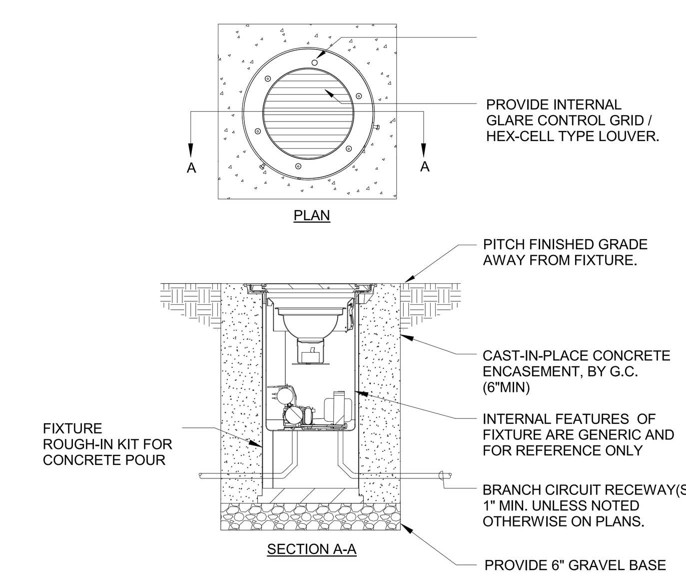

6 E0.04 GENERATOR DUCT-BANK DETAIL "E-E"

-NTS-

E1 2" ATS-OS, SCHEDULE 40 P.V.C.

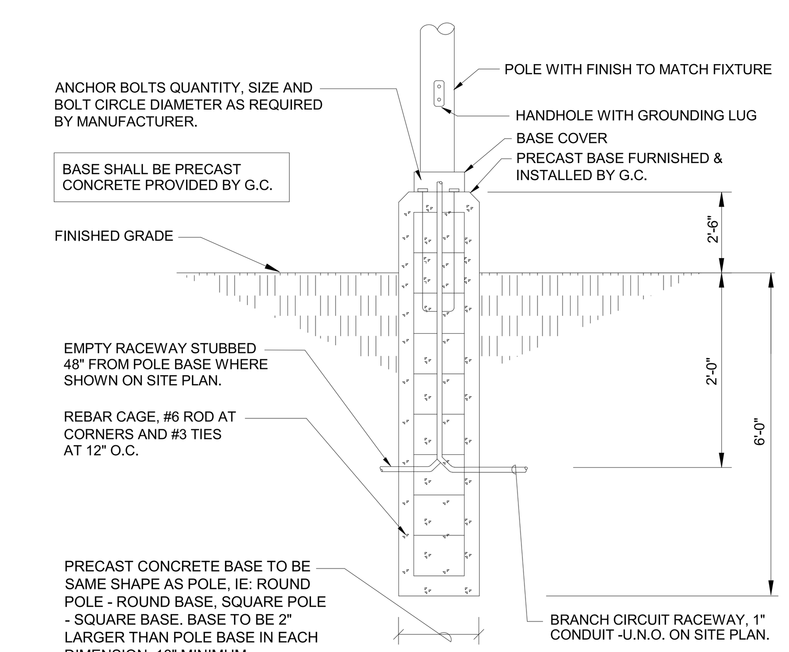
E2 1-1/2" ATS-LS, SCHEDULE 40 P.V.C.

SP 2" SPARE, SCHEDULE 40 P.V.C.



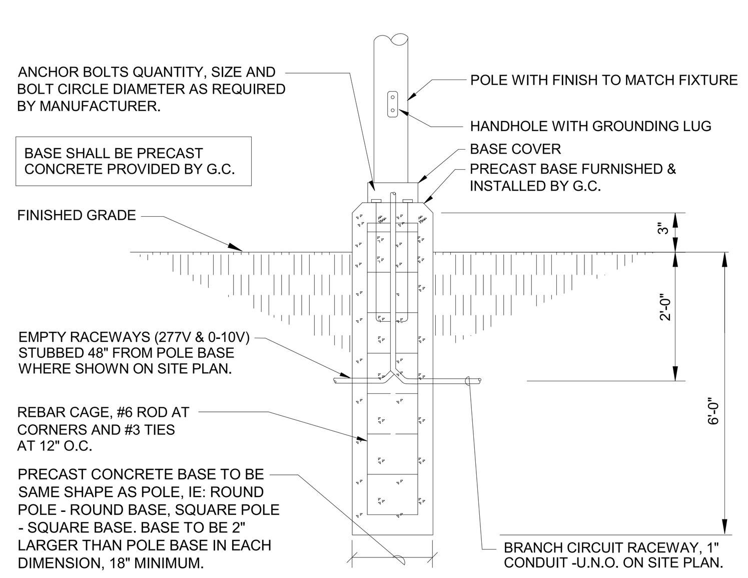

7 E0.04 GROUND MOUNTED LIGHT DETAIL

SCALE: N.T.S.



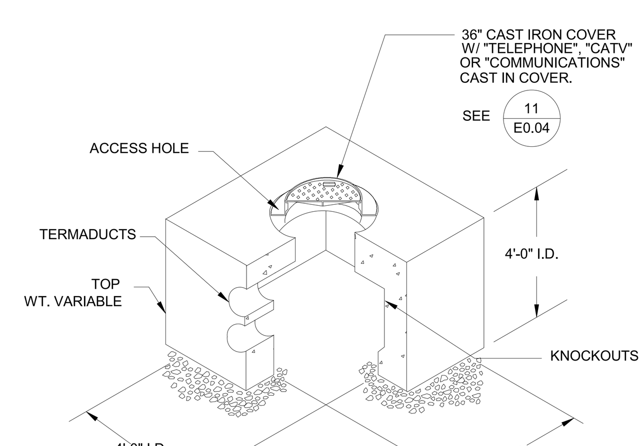

8 E0.04 TYPICAL PARKING/DRIVE POLE BASE DETAIL

SCALE: N.T.S.



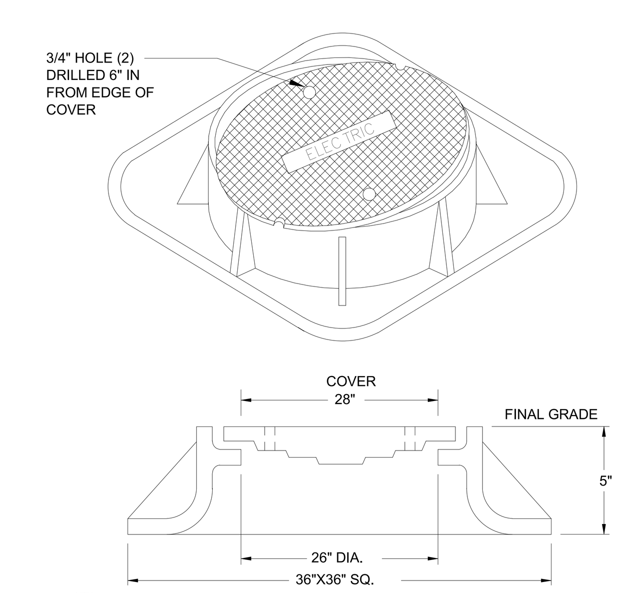

9 E0.04 TYPICAL PEDESTRIAN POLE BASE DETAIL

SCALE: N.T.S.




10 E0.04 ELECTRICAL, TELEPHONE & C.A.T.V. & COMMUNICATIONS HANDHOLE T C

SCALE: N.T.S.




11 E0.04 FRAME AND COVER DETAIL

SCALE: N.T.S.

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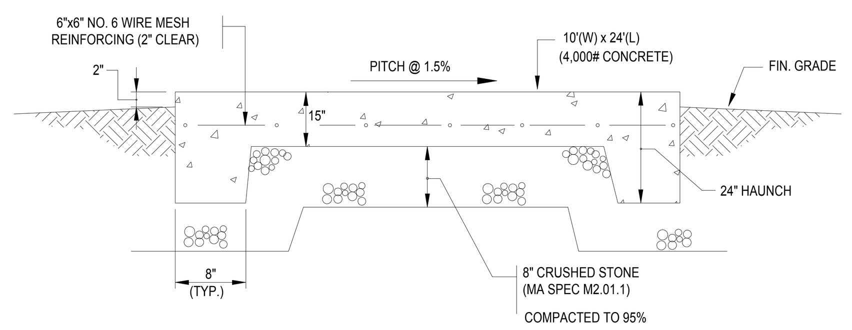
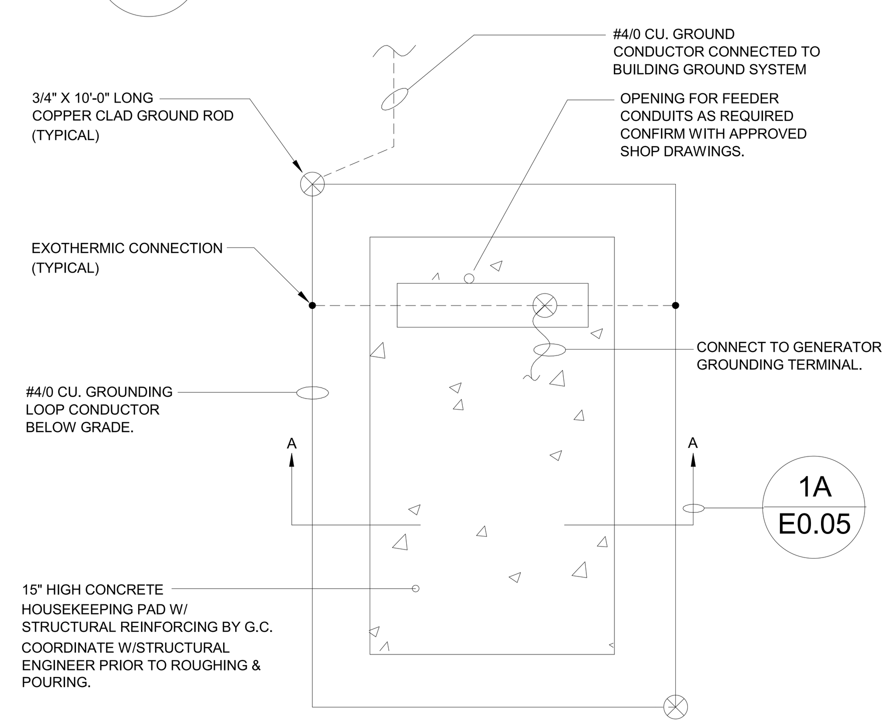
SHEET TITLE:
ELECTRICAL SITE DETAILS

SHEET #:
E0.04




1A E0.05 GENERATOR PAD DETAIL 'A-A'

-NTS-

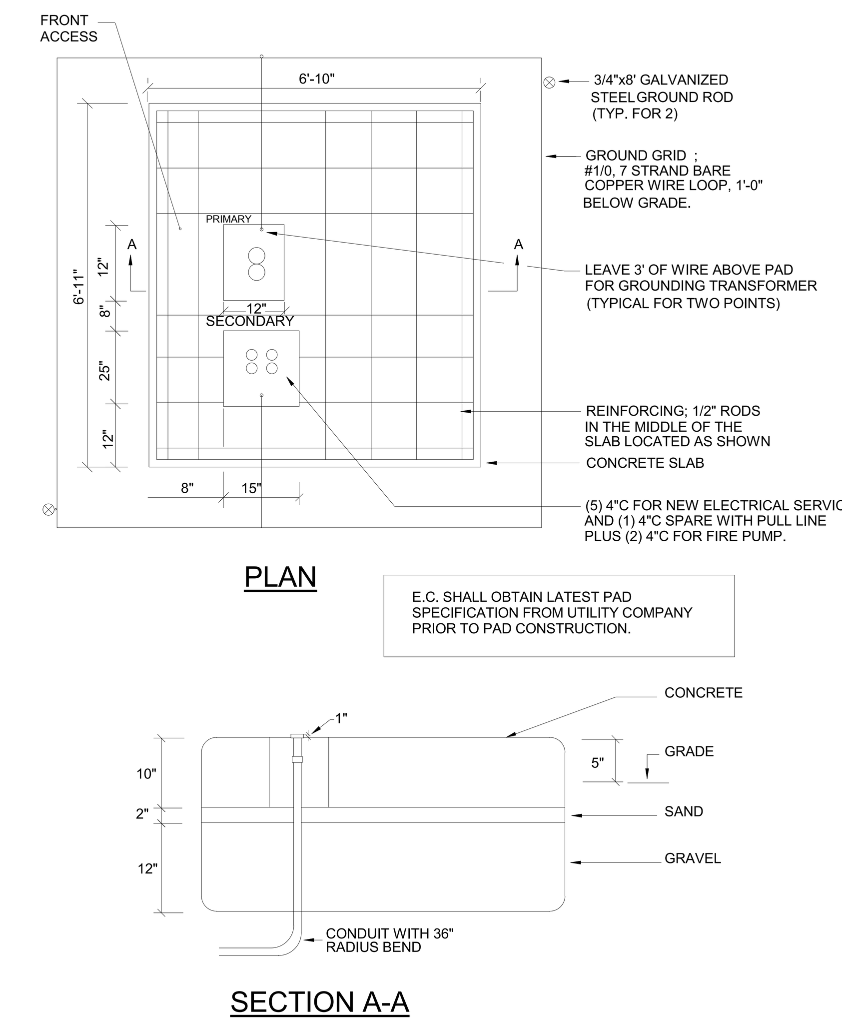



1 E0.05 GENERATOR PAD DETAIL (SEPARATELY DERIVED SYSTEM)

-NTS-

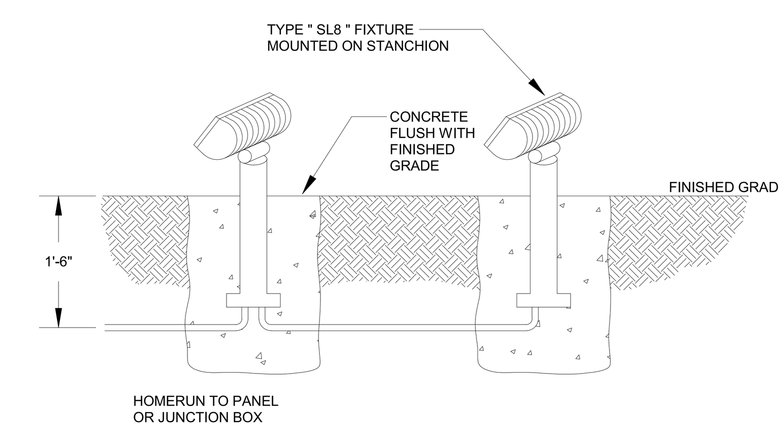
NOTE:

1. PAD SHALL BE PROVIDED IN ACCORDANCE WITH APPROVED SHOP DRAWINGS. CONFIRM DIMENSIONS. PAD SHALL EXTEND 6" BEYOND GENERATOR ALL AROUND.



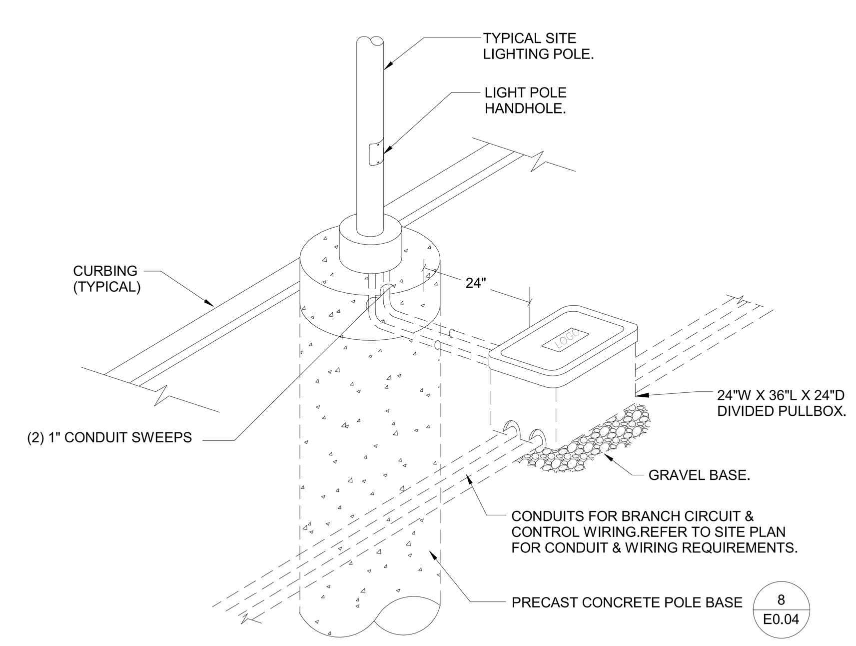

2 E0.05 PADMOUNT TRANSFORMER PAD DETAIL

-NTS-




3 E0.05 ON-GRADE LIGHT DETAIL

SCALE: N.T.S.




4 E0.05 SITE LIGHTING BASE WITH PULL BOX DETAIL

SCALE: N.T.S.

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DORE & WHITTIER ARCHITECTS, INC.

Project No. 17-759

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21 CRESCENT STREET
WHITINSVILLE, MA 01588

Planning Board Submission

| REVISION: | Date: |
|---|---|
| | |

DATE: 04/09/2019

SCALE:

SHEET TITLE: ELECTRICAL SITE DETAILS

SHEET #: E0.05