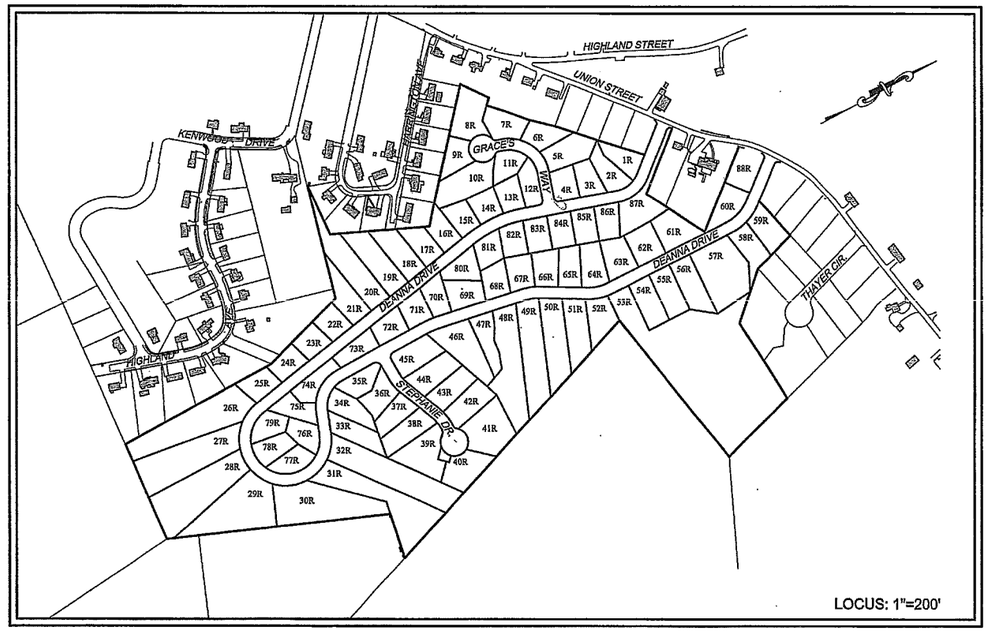
AMENDED DEFINITIVE SUBDIVISION PLANS

GREENWOOD II

LOCATED IN:
HOLDEN, MASSACHUSETTS



SHEET INDEX

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ST-1	SOIL TEST LOCATION PLAN
C-01 - C-08	SITE PLAN
P-01 - P-07	PLAN & PROFILE DEANNA DR.
P-08	PLAN & PROFILE GRACE'S WAY
P-09	PLAN & PROFILE STEPHANIE DR.
P-10 & P-11	PLAN & PROFILE UNION STREET
P-12 - P-15	CROSS COUNTRY PROFILE
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87 LOT SUBDIVISION - TOTAL AREA = 62.63 ACRES

ROADWAYS

ROAD	LENGTH	AREA
DEANNA DRIVE	5,462.00'	6.24 ACRES
GRACE'S WAY	546.00'	0.73 ACRES
STEPHANIE DRIVE	569.28'	0.76 ACRES

COMMONWEALTH OF MASSACHUSETTS JAMES B. KALLOCH No. 10616 REGISTERED PROFESSIONAL LAND SURVEYOR

COMMONWEALTH OF MASSACHUSETTS JAMES B. KALLOCH No. 24532 REGISTERED PROFESSIONAL ENGINEER

James B. Kalloch 7/11/17

WAIVERS REQUESTED:

A WAIVER IS REQUESTED FROM A 28' WIDE ROAD TO A 24' WIDE ROAD

A WAIVER IS REQUESTED TO REMOVE THE ISLANDS WITHIN THE CULDESAC

A WAIVER IS REQUESTED TO ALLOW 1:1 SLOPES WITHIN THE RIGHT OF WAY

A WAIVER IS REQUESTED TO EXCEED 5% GRADE WITHIN 300' OF AN INTERSECTION

REVISIONS

REV.	DATE	COMMENT	BY
1	9/28/16	MULTIPLE REVISIONS	RMG
2	12/19/16	MULTIPLE REVISIONS	RMG
3	1/31/17	MULTIPLE REVISIONS	RMG
4	5/10/17	MULTIPLE REVISIONS	RMG
5	7/11/17	MULTIPLE REVISIONS	RMG

NOTE:
PROPERTY LINE INFORMATION WAS TAKEN FROM EXISTING PLANS OF RECORD IN THE W.C.R.O.D. PLAN BOOK 665 PLAN 65 BY JAMES B. KALLOCH R.L.S DATED 10/05/92.

THIS ENDORSEMENT MAKES NO DETERMINATION AS TO ZONING COMPLIANCE OR PLAN ACCURACY.

APPROVAL UNDER THE SUBDIVISION CONTROL LAW IS REQUIRED.

HOLDEN PLANNING BOARD:

Date: _____

Certificate of No Appeal
Decision of the Town of Holden Planning Board approving this plan was recorded in the office of the Holden Town Clerk on
Date: _____
And no notice of appeal there from received by the Holden Town Clerk during the 20 days following.

Town Clerk Date

ASSESSORS PARCEL: 132-080
W.C.R.O.D DEED BOOK 52332 PAGE 83

FOR SUBDIVISION DECISION OF GREENWOOD II
SEE PLAN RECORDED IN THE
W.D.R.D. PLAN BOOK 871 PLAN 117
ENTITLED "DEFINITIVE PLAN OF GREENWOOD II"
DATED AUGUST 21, 2000

AMENDED DEFINITIVE PLAN
GREENWOOD II

LOCATED ON
UNION STREET
HOLDEN, MASSACHUSETTS

SCALE: 1"=40'

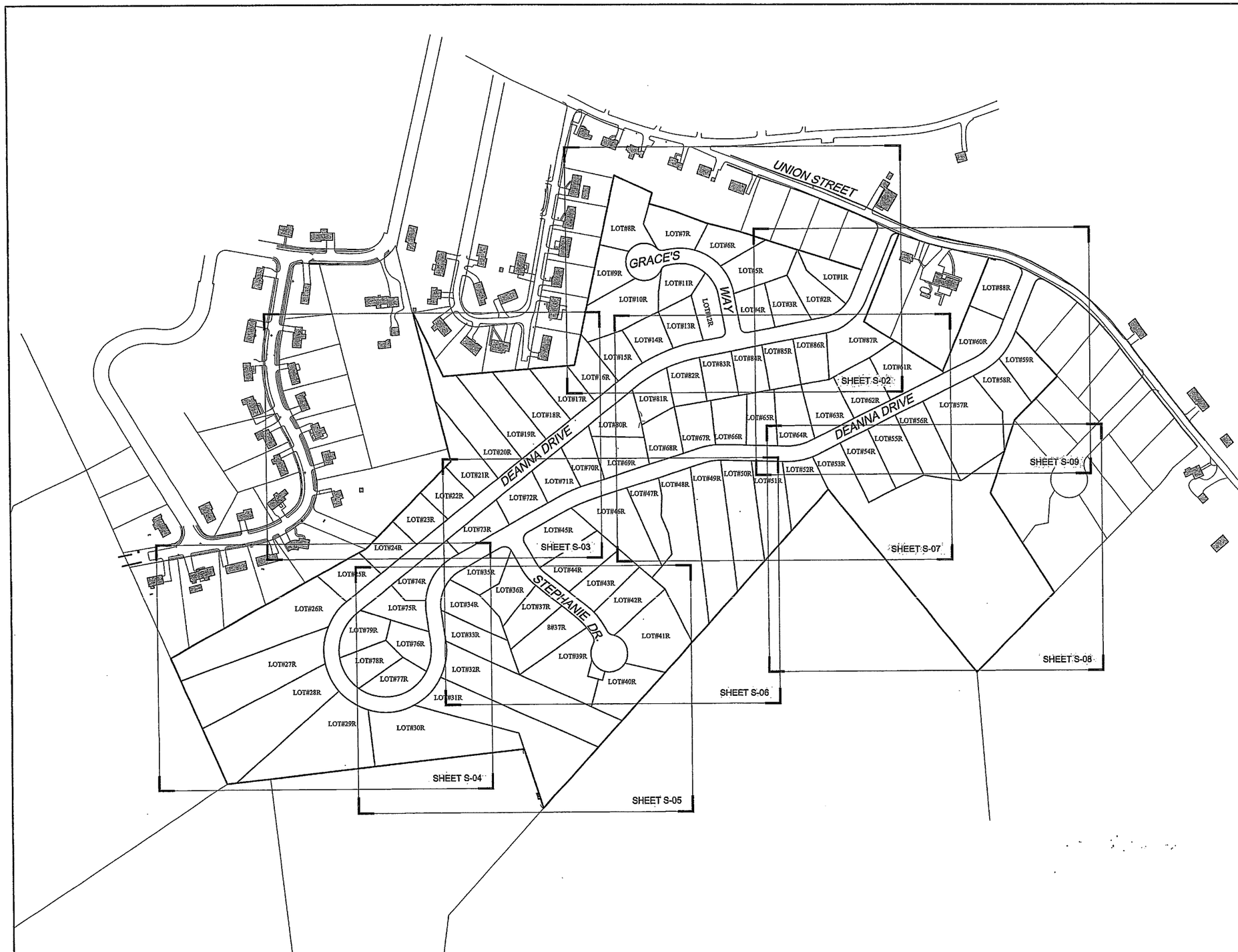
OWNED BY & PREPARED FOR

JACKSON WOODS INVESTMENTS, LLC.
87 MAIN STREET
RUTLAND, MA. 01543

New England Environmental Design, LLC
Environmental Consultants ■ Civil Engineering Consultants
Land Surveying Consultants
P.O. Box 376 Rutland, MA 01543
(508) 829-7222 Ph (508) 829-7522 Fax

Date: September 07, 2015
Drawn By: RMG
Checked By: JBK
Job #: 907-13

INDEX



PLAN BOOK 665 PLAN 65

FOR REGISTRY OF DEEDS USE ONLY

THIS ENDORSEMENT MAKES NO DETERMINATION AS TO ZONING COMPLIANCE OR PLAN ACCURACY.

APPROVAL UNDER THE SUBDIVISION CONTROL LAW IS REQUIRED.

HOLDEN PLANNING BOARD:

Date: _____

ZONING REQUIREMENTS

ZONING DISTRICT: R-15		ZONING DISTRICT: R-20	
AREA	15,000 S.F.	AREA	20,000 S.F.
FRONTAGE	80 FEET	FRONTAGE	80 FEET
FRONT YARD	30 FEET	FRONT YARD	30 FEET
SIDE YARD	15 FEET	SIDE YARD	15 FEET
REAR YARD	20 FEET	REAR YARD	20 FEET
LOT WIDTH	100 FEET	LOT WIDTH	100 FEET

ASSESSORS PARCEL: 132-080
W.C.R.O.D DEED BOOK 52332 PAGE 83

FOR SUBDIVISION DECISION OF GREENWOOD II
SEE PLAN RECORDED IN THE
W.D.R.D. PLAN BOOK 871 PLAN 117
ENTITLED "DEFINITIVE PLAN OF GREENWOOD II"
DATED AUGUST 21, 2000

AMENDED DEFINITIVE PLAN GREENWOOD II

LOCATED ON
UNION STREET
HOLDEN, MASSACHUSETTS

SCALE: 1"=150'

OWNED BY & PREPARED FOR

JACKSON WOODS INVESTMENTS, LLC.
87 MAIN STREET
RUTLAND, MA. 01543

New England Environmental Design, LLC

Environmental Consultants ■ Civil Engineering Consultants
Land Surveying Consultants
P.O. Box 376 Rutland, MA 01543
(508) 829-7222 Ph (508) 829-7522 Fax

REVISIONS

REV	DATE	COMMENT	BY
1	12/19/16	MULTIPLE REVISIONS	RMG
2	1/31/17	MULTIPLE REVISIONS	RMG
3	5/10/17	MULTIPLE REVISIONS	RMG
4	7/11/17	MULTIPLE REVISIONS	RMG

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Town Clerk Date

TYPICAL LEGEND

DRILL HOLE	⊙
IRON PIPE	○
CONCRETE BOUND	◻
GRANITE BOUND	⊡
BOUNDARY LINE	
PROP. LOT LINE	
EASEMENT LINE	
SETBACK LINE	

GRAPHIC SCALE
150 0 150 300
(IN FEET)
1 inch = 150 ft.

I CERTIFY THAT THE PREPARATION OF THIS PLAN CONFORMS TO THE RULES AND REGULATIONS OF THE REGISTRY OF DEEDS OF THE COMMONWEALTH OF MASSACHUSETTS

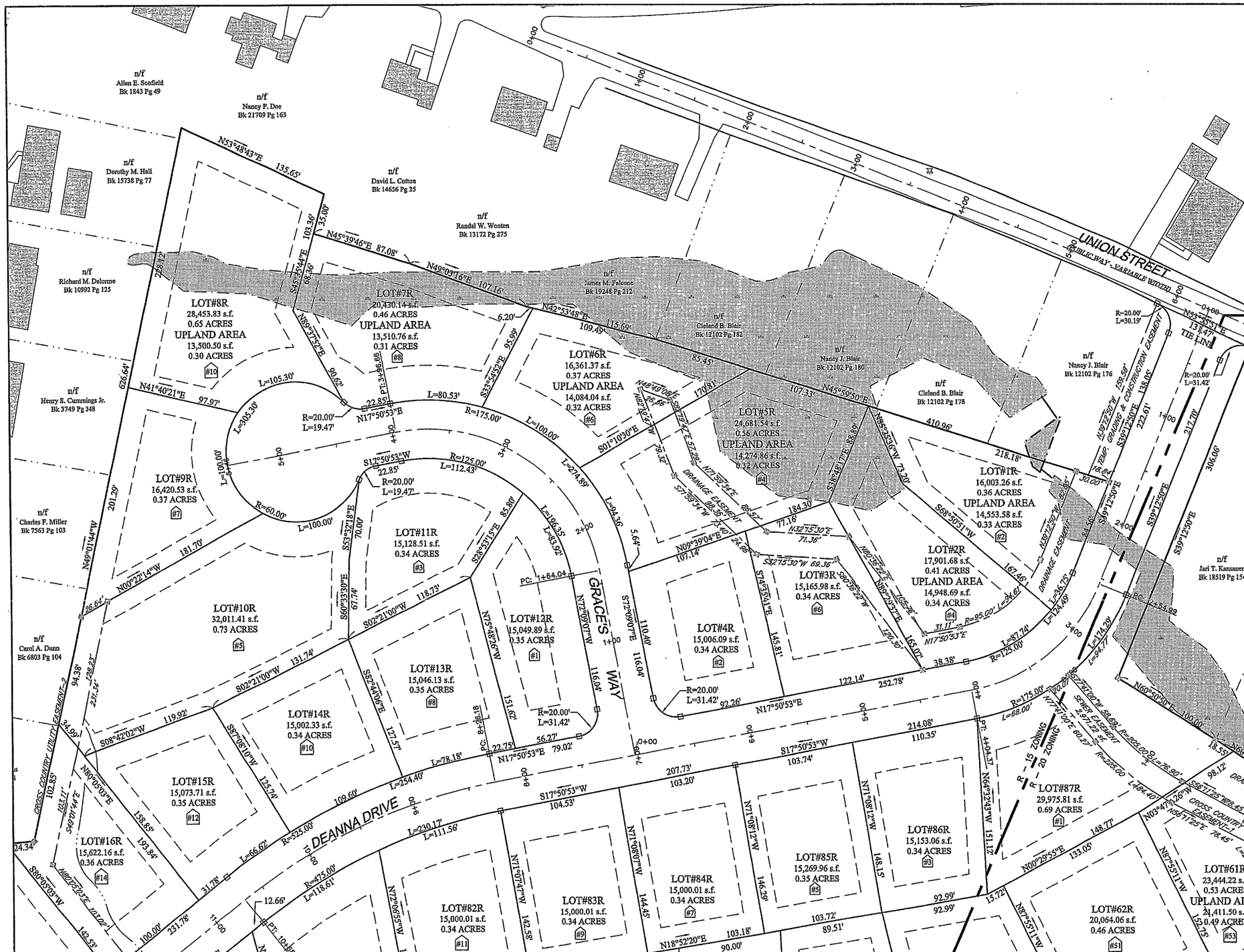
James B. Kalloch DATE: 7/11/17
James B. Kalloch - Professional Land Surveyor No. 10616

COMMONWEALTH OF MASSACHUSETTS
JAMES B. KALLOCH
No. 10616
REGISTERED PROFESSIONAL LAND SURVEYOR

Date: September 07, 2015
Drawn By: RMG
Checked By: JBK
Job #: 907-13

S-01

Sheet 1 of 9



PLAN BOOK 665 PLAN 65

FOR REGISTRY OF DEEDS USE ONLY

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APPROVAL UNDER THE SUBDIVISION CONTROL LAW IS REQUIRED.

HOLDEN PLANNING BOARD:

Date:

ZONING REQUIREMENTS

ZONING DISTRICT: R-15		ZONING DISTRICT: R-20	
AREA	15,000 S.F.	AREA	20,000 S.F.
FRONTAGE	80 FEET	FRONTAGE	80 FEET
FRONT YARD	30 FEET	FRONT YARD	30 FEET
SIDE YARD	15 FEET	SIDE YARD	15 FEET
REAR YARD	20 FEET	REAR YARD	20 FEET
LOT WIDTH	100 FEET	LOT WIDTH	100 FEET

ASSESSORS PARCEL: 132-080
W.C.R.O.D DEED BOOK 52332 PAGE 83

FOR SUBDIVISION DECISION OF GREENWOOD II
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DATED AUGUST 21, 2000

AMENDED DEFINITIVE PLAN GREENWOOD II

LOCATED ON
UNION STREET
HOLDEN, MASSACHUSETTS

SCALE: 1"=40'

OWNED BY & PREPARED FOR

JACKSON WOODS INVESTMENTS, LLC.
87 MAIN STREET
RUTLAND, MA. 01543

New England Environmental Design, LLC
Environmental Consultants ■ Civil Engineering Consultants
Land Surveying Consultants
P.O. Box 376 Rutland, MA 01543
(508) 829-7222 Ph (508) 829-7522 Fax

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2	1/31/17	MULTIPLE REVISIONS	RMG
3	5/10/17	MULTIPLE REVISIONS	RMG
4	7/11/17	MULTIPLE REVISIONS	RMG

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Date:
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Town Clerk Date

TYPICAL LEGEND

DRILL HOLE	⊗
IRON PIPE	○
CONCRETE BOUND	▭
GRANITE BOUND	⊟
BOUNDARY LINE	
PROP. LOT LINE	
EASEMENT LINE	
SETBACK LINE	

GRAPHIC SCALE
40 0 40 80
(IN FEET)
1 inch = 40 ft.

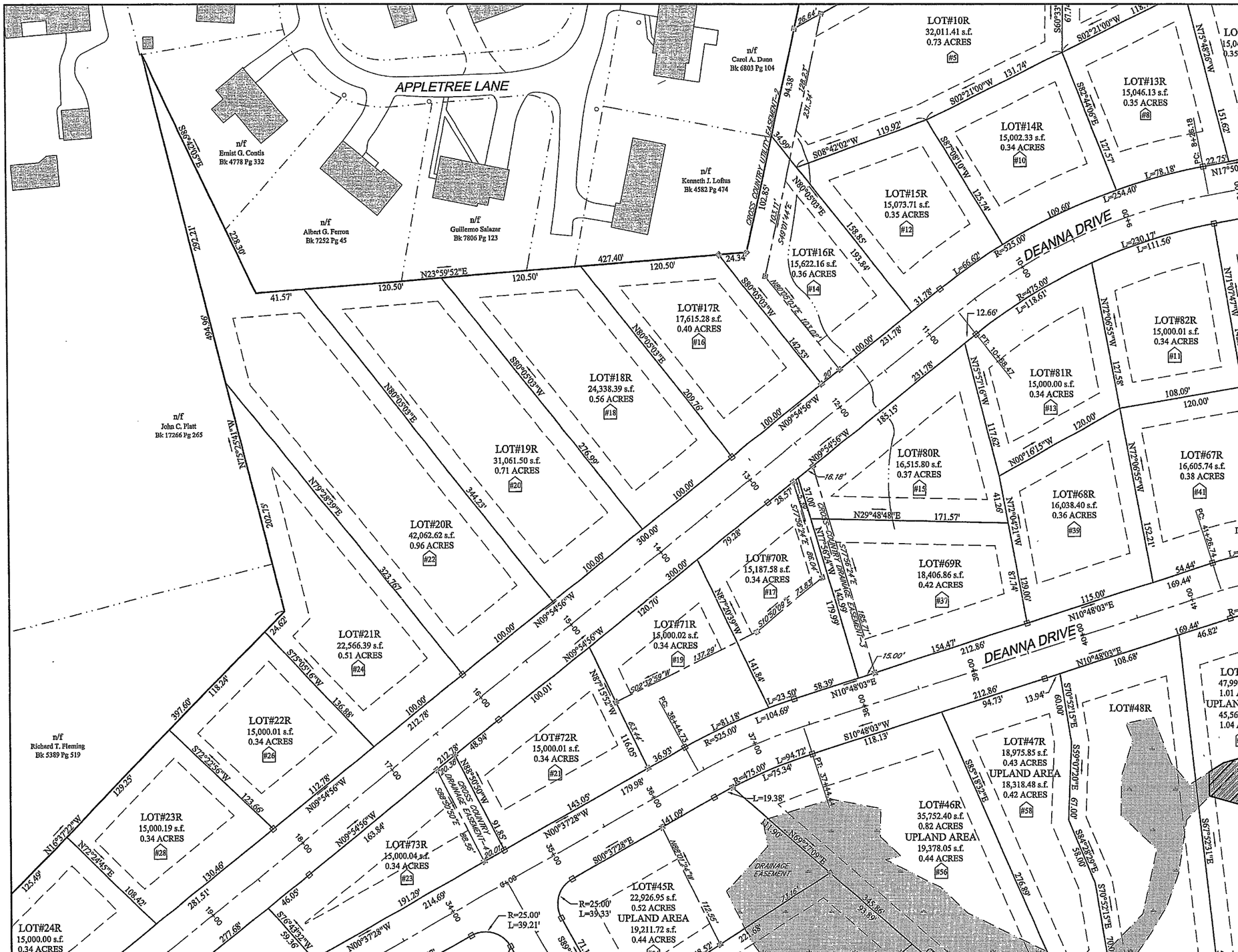
I CERTIFY THAT THE PREPARATION OF THIS PLAN CONFORMS TO THE RULES AND REGULATIONS OF THE REGISTRY OF DEEDS OF THE COMMONWEALTH OF MASSACHUSETTS

James B. Kalloch DATE: 7/11/17
James B. Kalloch - Professional Land Surveyor No. 10616

COMMONWEALTH OF MASSACHUSETTS JAMES B. KALLOCH No. 10616 REGISTERED PROFESSIONAL LAND SURVEYOR

Date: September 07, 2015
Drawn By: RMG
Checked By: JBK
Job #: 907-13

S-02



FOR REGISTRY OF DEEDS USE ONLY

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APPROVAL UNDER THE SUBDIVISION CONTROL LAW IS REQUIRED.

HOLDEN PLANNING BOARD:

Date: _____

ZONING REQUIREMENTS

ZONING DISTRICT: R-15		ZONING DISTRICT: R-20	
AREA	15,000 S.F.	AREA	20,000 S.F.
FRONTAGE	80 FEET	FRONTAGE	80 FEET
FRONT YARD	30 FEET	FRONT YARD	30 FEET
SIDE YARD	15 FEET	SIDE YARD	15 FEET
REAR YARD	20 FEET	REAR YARD	20 FEET
LOT WIDTH	100 FEET	LOT WIDTH	100 FEET

ASSESSORS PARCEL: 132-080
W.C.R.O.D DEED BOOK 52332 PAGE 83

FOR SUBDIVISION DECISION OF GREENWOOD II
SEE PLAN RECORDED IN THE
W.D.R.D. PLAN BOOK 871 PLAN 117
ENTITLED "DEFINITIVE PLAN OF GREENWOOD II"
DATED AUGUST 21, 2000

AMENDED DEFINITIVE PLAN GREENWOOD II

LOCATED ON
UNION STREET
HOLDEN, MASSACHUSETTS

SCALE: 1"=40'

OWNED BY & PREPARED FOR

JACKSON WOODS INVESTMENTS, LLC.
87 MAIN STREET
RUTLAND, MA. 01543

New England Environmental Design, LLC
Environmental Consultants ■ Civil Engineering Consultants
Land Surveying Consultants
P.O. Box 376 Rutland, MA 01543
(508) 829-7222 Ph (508) 829-7522 Fax

REVISIONS

REV	DATE	COMMENT	BY
1	12/19/16	MULTIPLE REVISIONS	RMG
2	1/31/17	MULTIPLE REVISIONS	RMG
3	5/10/17	MULTIPLE REVISIONS	RMG
4	7/11/17	MULTIPLE REVISIONS	RMG

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Town Clerk Date

TYPICAL LEGEND

DRILL HOLE
IRON PIPE
CONCRETE BOUND
GRANITE BOUND
BOUNDARY LINE
PROP. LOT LINE
EASEMENT LINE
SETBACK LINE

GRAPHIC SCALE
40 0 40 80
(IN FEET)
1 inch = 40 ft.

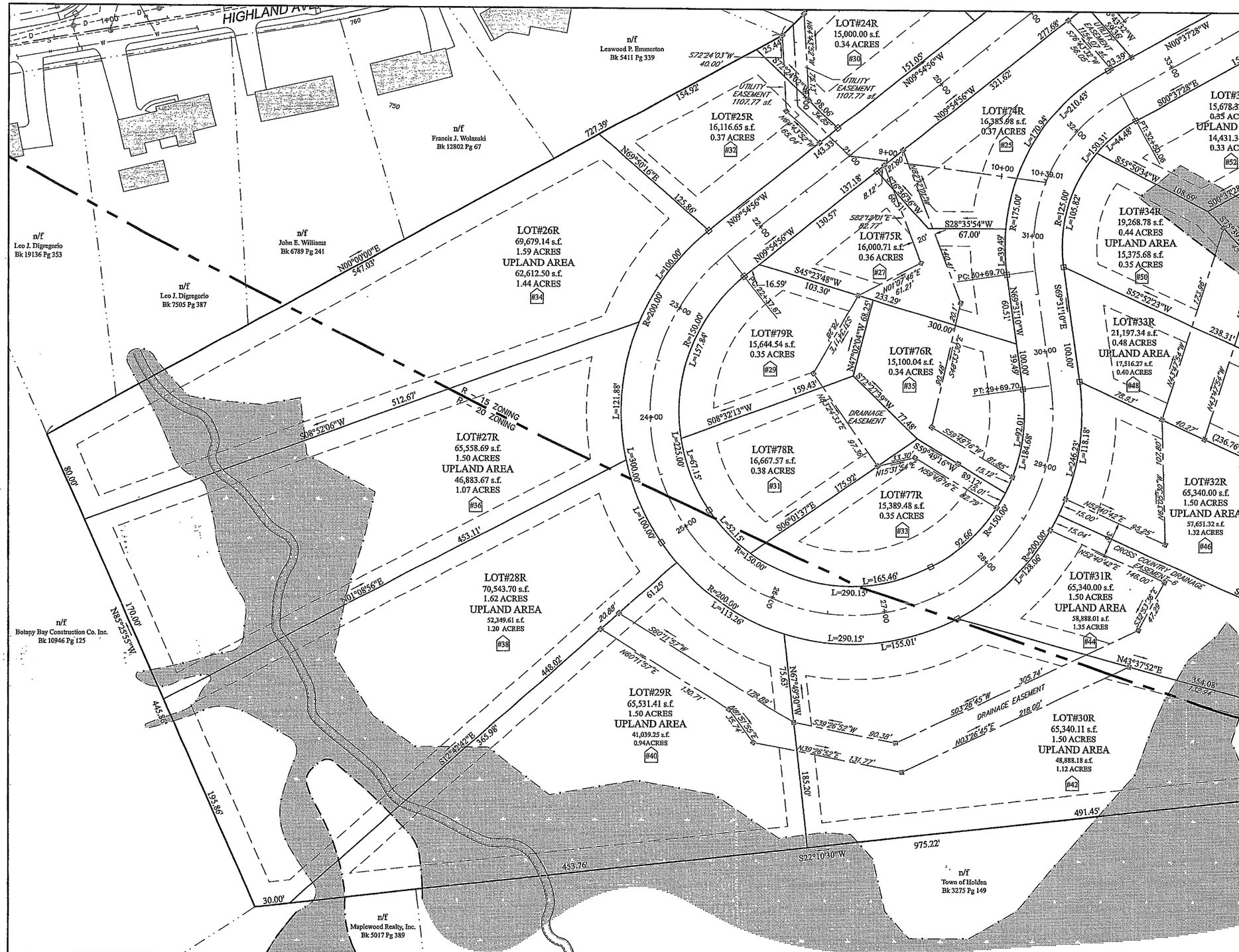
I CERTIFY THAT THE PREPARATION OF THIS PLAN CONFORMS TO THE RULES AND REGULATIONS OF THE REGISTRY OF DEEDS OF THE COMMONWEALTH OF MASSACHUSETTS

James B. Kalloch DATE: 7/11/17
James B. Kalloch - Professional Land Surveyor No. 10616

COMMONWEALTH OF MASSACHUSETTS JAMES B. KALLOCH No. 10616 REGISTERED PROFESSIONAL LAND SURVEYOR

Date: September 07, 2015
Drawn By: RMG
Checked By: JBK
Job #: 907-13

S-03



PLAN BOOK 666 PLAN 65

FOR REGISTRY OF DEEDS USE ONLY

THIS ENDORSEMENT MAKES NO DETERMINATION AS TO ZONING COMPLIANCE OR PLAN ACCURACY.

APPROVAL UNDER THE SUBDIVISION CONTROL LAW IS REQUIRED.

HOLDEN PLANNING BOARD:

Date: _____

ZONING REQUIREMENTS

ZONING DISTRICT: R-15		ZONING DISTRICT: R-20	
AREA	15,000 S.F.	AREA	20,000 S.F.
FRONTAGE	80 FEET	FRONTAGE	80 FEET
FRONT YARD	30 FEET	FRONT YARD	30 FEET
SIDE YARD	15 FEET	SIDE YARD	15 FEET
REAR YARD	20 FEET	REAR YARD	20 FEET
LOT WIDTH	100 FEET	LOT WIDTH	100 FEET

ASSESSORS PARCEL: 132-080
W.C.R.O.D DEED BOOK 52332 PAGE 83

FOR SUBDIVISION DECISION OF GREENWOOD II
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DATED AUGUST 21, 2000

AMENDED DEFINITIVE PLAN GREENWOOD II

LOCATED ON
UNION STREET
HOLDEN, MASSACHUSETTS

SCALE: 1"=40'

OWNED BY & PREPARED FOR

JACKSON WOODS INVESTMENTS, LLC.
87 MAIN STREET
RUTLAND, MA. 01543

New England Environmental Design, LLC

Environmental Consultants ■ Civil Engineering Consultants
Land Surveying Consultants
P.O. Box 376 Rutland, MA 01543
(508) 829-7222 Ph (508) 829-7522 Fax

REVISIONS

REV	DATE	COMMENT	BY
1	5/10/17	MULTIPLE REVISIONS	RMG
2	7/11/17	MULTIPLE REVISIONS	RMG
3	3/01/18	ADD UTILITY EASEMENT	RMG
4	5/04/18	ADD UTILITY EASEMENT	RMG

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Town Clerk _____ Date

TYPICAL LEGEND

DRILL HOLE	⊙
IRON PIPE	○
CONCRETE BOUND	▫
GRANITE BOUND	⊟
BOUNDARY LINE	
PROP. LOT LINE	
EASEMENT LINE	
SETBACK LINE	

GRAPHIC SCALE
40 0 40 80
(IN FEET)
1 inch = 40 ft.

I CERTIFY THAT THE PREPARATION OF THIS PLAN CONFORMS TO THE RULES AND REGULATIONS OF THE REGISTRY OF DEEDS OF THE COMMONWEALTH OF MASSACHUSETTS

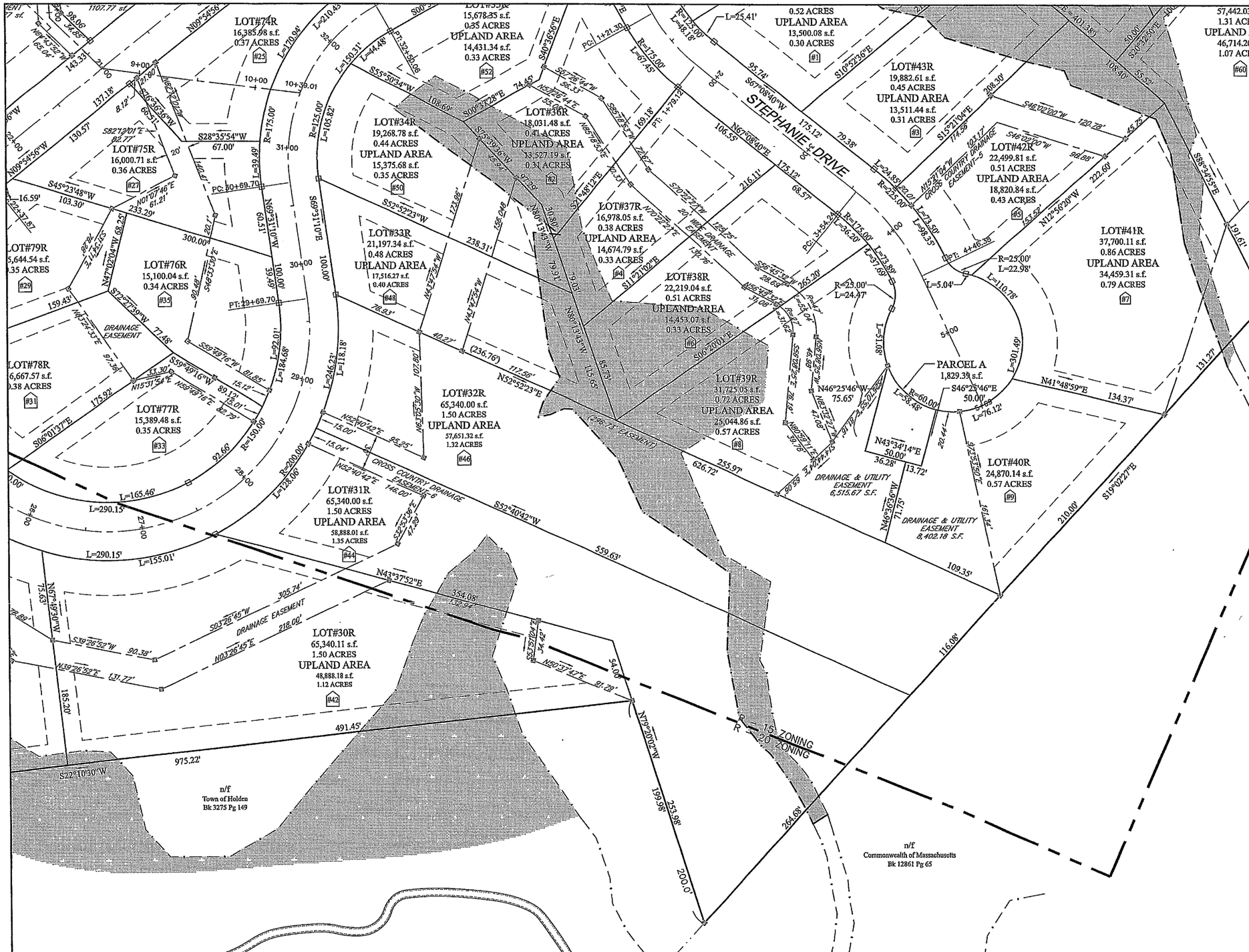
James B. Kalloch DATE: 5/8/18
James B. Kalloch - Professional Land Surveyor No. 10616

COMMONWEALTH OF MASSACHUSETTS
JAMES B. KALLOCH
No. 10616
REGISTERED PROFESSIONAL LAND SURVEYOR

Date: September 07, 2015
Drawn By: RMG
Checked By: JBK
Job #: 907-13

S-04

Sheet 4 of 9



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APPROVAL UNDER THE SUBDIVISION CONTROL LAW IS REQUIRED.

HOLDEN PLANNING BOARD:

Date:

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ZONING DISTRICT: R-15		ZONING DISTRICT: R-20	
AREA	15,000 S.F.	AREA	20,000 S.F.
FRONTAGE	80 FEET	FRONTAGE	80 FEET
FRONT YARD	30 FEET	FRONT YARD	30 FEET
SIDE YARD	15 FEET	SIDE YARD	15 FEET
REAR YARD	20 FEET	REAR YARD	20 FEET
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ASSESSORS PARCEL: 132-080
W.C.R.O.D DEED BOOK 52332 PAGE 83

FOR SUBDIVISION DECISION OF GREENWOOD II
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DATED AUGUST 21, 2000

AMENDED DEFINITIVE PLAN GREENWOOD II

LOCATED ON
UNION STREET
HOLDEN, MASSACHUSETTS

SCALE: 1"=40'

OWNED BY & PREPARED FOR

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87 MAIN STREET
RUTLAND, MA. 01543

New England Environmental Design, LLC

Environmental Consultants ■ Civil Engineering Consultants
Land Surveying Consultants
P.O. Box 376 Rutland, MA 01543
(508) 829-7222 Ph (508) 829-7522 Fax

REVISIONS

REV	DATE	COMMENT	BY
1	5/10/17	MULTIPLE REVISIONS	RMG
2	7/11/17	MULTIPLE REVISIONS	RMG
3	9/08/17	MULTIPLE REVISIONS	RMG
4	5/04/18	REVISIONS PER WESTON & SAMPSON	RMG

Certificate of No Appeal

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TYPICAL LEGEND

DRILL HOLE	⊙
IRON PIPE	○
CONCRETE BOUND	▫
GRANITE BOUND	⊡
BOUNDARY LINE	
PROP. LOT LINE	
EASEMENT LINE	
SETBACK LINE	

GRAPHIC SCALE
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(IN FEET)
1 inch = 40 ft.

I CERTIFY THAT THE PREPARATION OF THIS PLAN CONFORMS TO THE RULES AND REGULATIONS OF THE REGISTRY OF DEEDS OF THE COMMONWEALTH OF MASSACHUSETTS

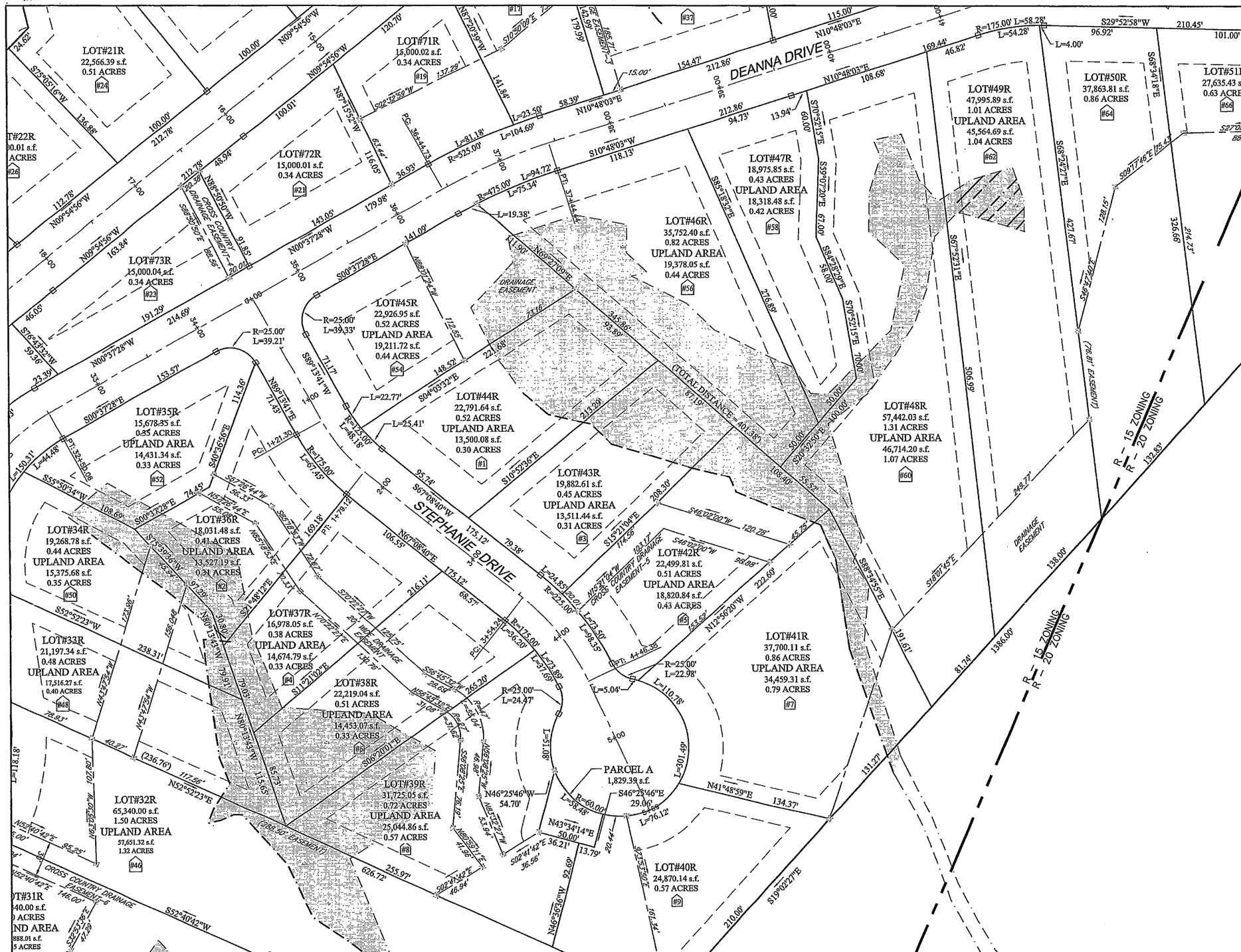
James B. Kalloch DATE: 5/8/18
James B. Kalloch - Professional Land Surveyor No. 10616.

COMMONWEALTH OF MASSACHUSETTS
JAMES B. KALLOCH
No. 10616
REGISTERED PROFESSIONAL LAND SURVEYOR

Date: September 07, 2015
Drawn By: RMG
Checked By: JBK
Job #: 907-13

S-05

Sheet 5 of 9



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ASSESSORS PARCEL: 132-080
W.C.R.O.D DEED BOOK 52332 PAGE 83

FOR SUBDIVISION DECISION OF GREENWOOD II
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HOLDEN, MASSACHUSETTS

SCALE: 1"=40'

OWNED BY & PREPARED FOR

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RUTLAND, MA. 01543

New England Environmental Design, LLC

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P.O. Box 376 Rutland, MA 01543
(508) 829-7222 Ph (508) 829-7522 Fax

REVISIONS

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2	5/10/17	MULTIPLE REVISIONS	RMG
3	7/11/17	MULTIPLE REVISIONS	RMG
4	9/08/17	MULTIPLE REVISIONS	RMG

Certificate of No Appeal

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Town Clerk Date

TYPICAL LEGEND

DRILL HOLE	⊙
IRON PIPE	○
CONCRETE BOUND	▪
GRANITE BOUND	▫
BOUNDARY LINE	
PROP. LOT LINE	
EASEMENT LINE	
SETBACK LINE	

GRAPHIC SCALE
40 0 40 80
(IN FEET)
1 inch = 40 ft.

I CERTIFY THAT THE PREPARATION OF THIS PLAN CONFORMS TO THE RULES AND REGULATIONS OF THE REGISTRY OF DEEDS OF THE COMMONWEALTH OF MASSACHUSETTS

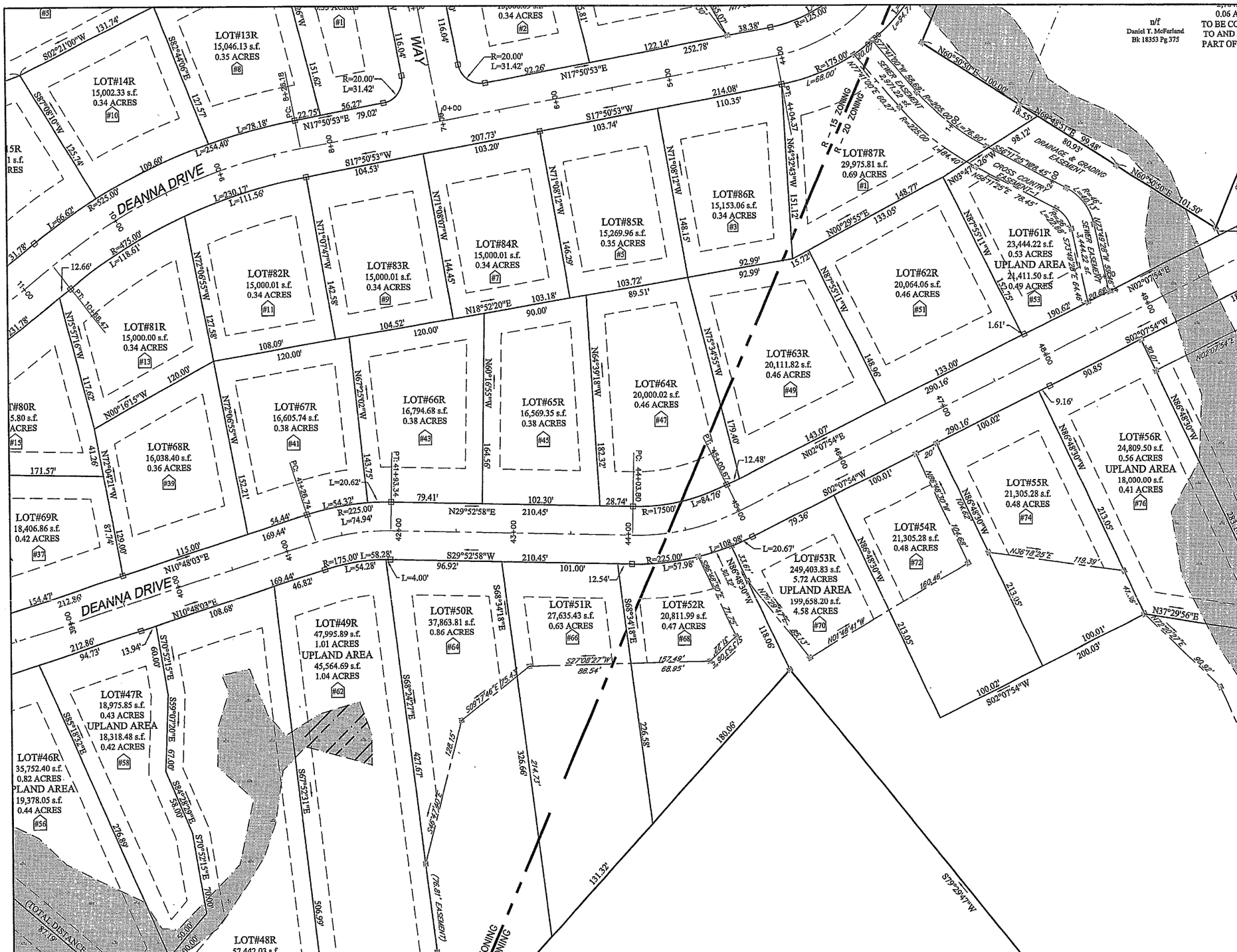
James B. Kalloch DATE: 9/20/17
James B. Kalloch - Professional Land Surveyor No. 10616

COMMONWEALTH OF MASSACHUSETTS JAMES B. KALLOCH No. 10616 REGISTERED PROFESSIONAL LAND SURVEYOR

Date: September 07, 2015
Drawn By: RMG
Checked By: JBK
Job #: 907-13

S-06

Sheet 6 of 9



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APPROVAL UNDER THE SUBDIVISION CONTROL LAW IS REQUIRED.

HOLDEN PLANNING BOARD:

Date:

ZONING REQUIREMENTS

ZONING DISTRICT: R-15		ZONING DISTRICT: R-20	
AREA	15,000 S.F.	AREA	20,000 S.F.
FRONTAGE	80 FEET	FRONTAGE	80 FEET
FRONT YARD	30 FEET	FRONT YARD	30 FEET
SIDE YARD	15 FEET	SIDE YARD	15 FEET
REAR YARD	20 FEET	REAR YARD	20 FEET
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ASSESSORS PARCEL: 132-080
W.C.R.O.D DEED BOOK 52332 PAGE 83

FOR SUBDIVISION DECISION OF GREENWOOD II
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W.D.R.D. PLAN BOOK 871 PLAN 117
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DATED AUGUST 21, 2000

AMENDED DEFINITIVE PLAN GREENWOOD II

LOCATED ON
UNION STREET
HOLDEN, MASSACHUSETTS

SCALE: 1"=40'

OWNED BY & PREPARED FOR

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87 MAIN STREET
RUTLAND, MA. 01543

New England Environmental Design, LLC
Environmental Consultants ■ Civil Engineering Consultants
Land Surveying Consultants
P.O. Box 376 Rutland, MA 01543
(508) 829-7222 Ph (508) 829-7522 Fax

REVISIONS

REV	DATE	COMMENT	BY
1	12/10/16	MULTIPLE REVISIONS	RMG
2	1/31/17	MULTIPLE REVISIONS	RMG
3	5/10/17	MULTIPLE REVISIONS	RMG
4	7/11/17	MULTIPLE REVISIONS	RMG

Certificate of No Appeal

Decision of the Town of Holden Planning Board approving this plan was recorded in the office of the Holden Town Clerk on
Date:_____
And no notice of appeal there from received by the Holden Town Clerk during the 20 days following.

Town Clerk Date

TYPICAL LEGEND

DRILL HOLE
IRON PIPE
CONCRETE BOUND
GRANITE BOUND
BOUNDARY LINE
PROP. LOT LINE
EASEMENT LINE
SETBACK LINE

GRAPHIC SCALE
40 0 40 80
(IN FEET)
1 inch = 40 ft.

I CERTIFY THAT THE PREPARATION OF THIS PLAN CONFORMS TO THE RULES AND REGULATIONS OF THE REGISTRY OF DEEDS OF THE COMMONWEALTH OF MASSACHUSETTS

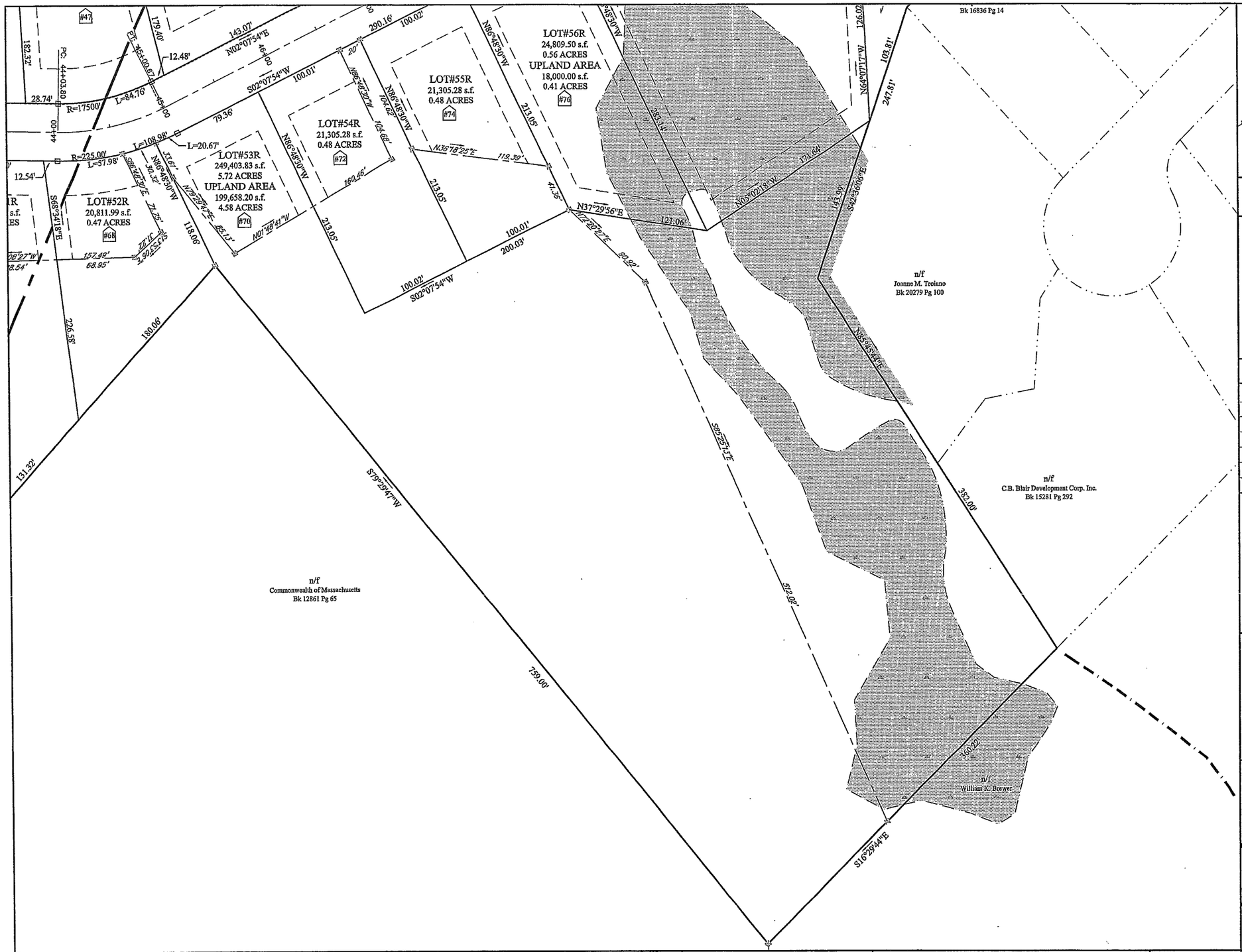
James B. Kalloch DATE: 7/11/17
James B. Kalloch - Professional Land Surveyor No. 10616

COMMONWEALTH OF MASSACHUSETTS JAMES B. KALLOCH No. 10616 REGISTERED PROFESSIONAL LAND SURVEYOR

Date: September 07, 2015
Drawn By: RMG
Checked By: JBK
Job #: 907-13

S-07

Sheet 7 of 9



FOR REGISTRY OF DEEDS USE ONLY

THIS ENDORSEMENT MAKES NO DETERMINATION AS TO ZONING COMPLIANCE OR PLAN ACCURACY.

APPROVAL UNDER THE SUBDIVISION CONTROL LAW IS REQUIRED.

HOLDEN PLANNING BOARD:

Date:

ZONING REQUIREMENTS

ZONING DISTRICT: R-15		ZONING DISTRICT: R-20	
AREA	15,000 S.F.	AREA	20,000 S.F.
FRONTAGE	80 FEET	FRONTAGE	80 FEET
FRONT YARD	30 FEET	FRONT YARD	30 FEET
SIDE YARD	15 FEET	SIDE YARD	15 FEET
REAR YARD	20 FEET	REAR YARD	20 FEET
LOT WIDTH	100 FEET	LOT WIDTH	100 FEET

ASSESSORS PARCEL: 132-080
W.C.R.O.D DEED BOOK 52332 PAGE 83

FOR SUBDIVISION DECISION OF GREENWOOD II
SEE PLAN RECORDED IN THE
W.D.R.D. PLAN BOOK 871 PLAN 117
ENTITLED "DEFINITIVE PLAN OF GREENWOOD II"
DATED AUGUST 21, 2000

AMENDED DEFINITIVE PLAN GREENWOOD II

LOCATED ON
UNION STREET
HOLDEN, MASSACHUSETTS

SCALE: 1"=40'

OWNED BY & PREPARED FOR

JACKSON WOODS INVESTMENTS, LLC.
87 MAIN STREET
RUTLAND, MA. 01543

New England Environmental Design, LLC
Environmental Consultants ■ Civil Engineering Consultants
Land Surveying Consultants
P.O. Box 376 Rutland, MA 01543
(508) 829-7222 Ph (508) 829-7522 Fax

REVISIONS

REV	DATE	COMMENT	BY
1	12/15/16	MULTIPLE REVISIONS	RMG
2	1/31/17	MULTIPLE REVISIONS	RMG
3	5/10/17	MULTIPLE REVISIONS	RMG
4	7/11/17	MULTIPLE REVISIONS	RMG

Certificate of No Appeal

Decision of the Town of Holden Planning Board approving this plan was recorded in the office of the Holden Town Clerk on
Date:
And no notice of appeal there from received by the Holden Town Clerk during the 20 days following.

Town Clerk Date

TYPICAL LEGEND

DRILL HOLE
IRON PIPE
CONCRETE BOUND
GRANITE BOUND
BOUNDARY LINE
PROP. LOT LINE
EASEMENT LINE
SETBACK LINE

GRAPHIC SCALE
40 0 40 80
(IN FEET)
1 inch = 40 ft.

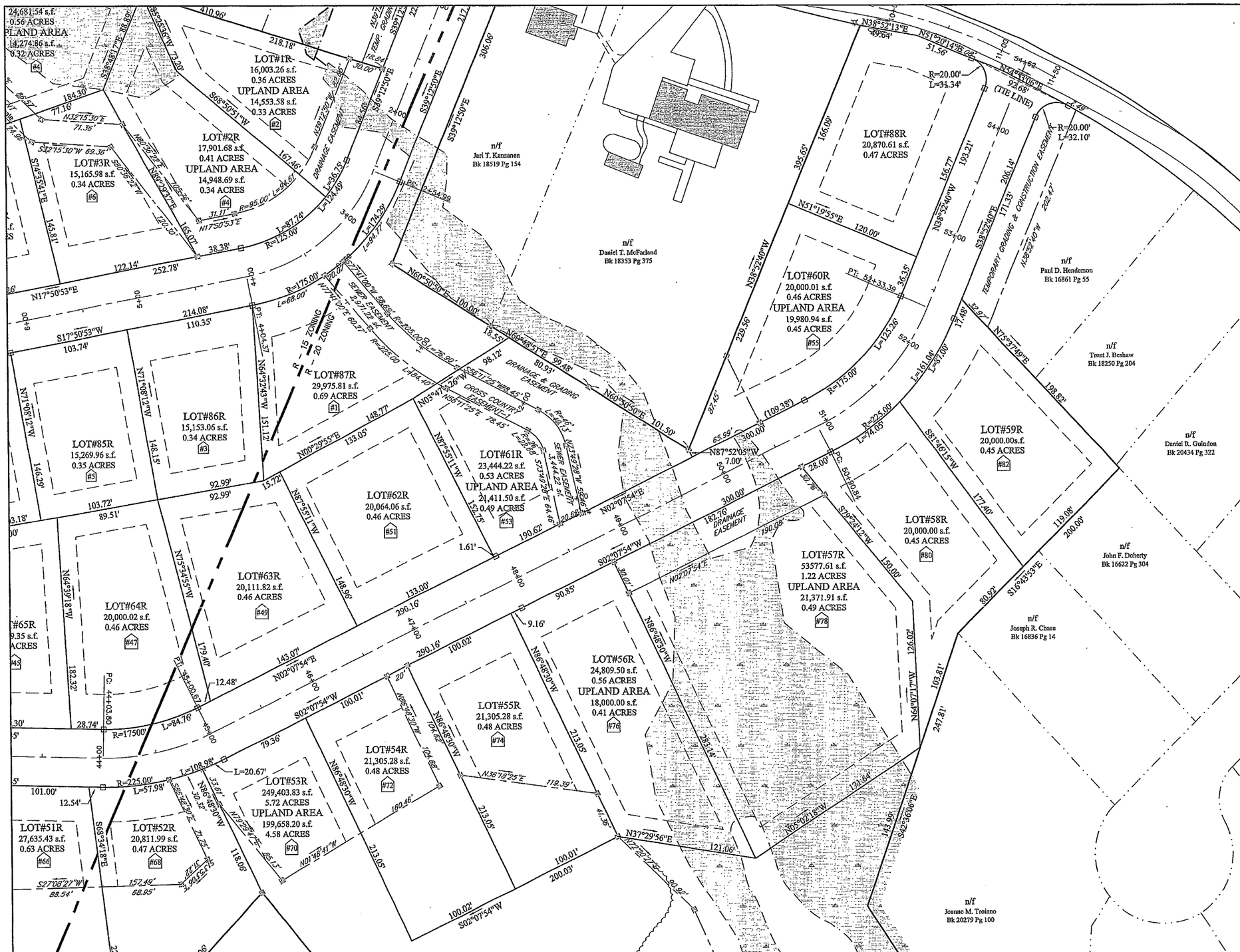
I CERTIFY THAT THE PREPARATION OF THIS PLAN CONFORMS TO THE RULES AND REGULATIONS OF THE REGISTRY OF DEEDS OF THE COMMONWEALTH OF MASSACHUSETTS

James B. Kalloch DATE: 7/11/17
James B. Kalloch - Professional Land Surveyor No. 10616

COMMONWEALTH OF MASSACHUSETTS
JAMES B. KALLOCH
No. 10616
REGISTERED PROFESSIONAL LAND SURVEYOR

Date: September 07, 2015
Drawn By: RMG
Checked By: JBK
Job #: 907-13

S-08
Sheet 8 of 9



PLAN BOOK 665 PLAN 65

FOR REGISTRY OF DEEDS USE ONLY

THIS ENDORSEMENT MAKES NO DETERMINATION AS TO ZONING COMPLIANCE OR PLAN ACCURACY.

APPROVAL UNDER THE SUBDIVISION CONTROL LAW IS REQUIRED.

HOLDEN PLANNING BOARD:

Date:

ZONING REQUIREMENTS

ZONING DISTRICT: R-15		ZONING DISTRICT: R-20	
AREA	15,000 S.F.	AREA	20,000 S.F.
FRONTAGE	80 FEET	FRONTAGE	80 FEET
FRONT YARD	30 FEET	FRONT YARD	30 FEET
SIDE YARD	15 FEET	SIDE YARD	15 FEET
REAR YARD	20 FEET	REAR YARD	20 FEET
LOT WIDTH	100 FEET	LOT WIDTH	100 FEET

ASSESSORS PARCEL: 132-080
W.C.R.O.D DEED BOOK 52332 PAGE 83

FOR SUBDIVISION DECISION OF GREENWOOD II
SEE PLAN RECORDED IN THE
W.D.R.D. PLAN BOOK 871 PLAN 117
ENTITLED "DEFINITIVE PLAN OF GREENWOOD II"
DATED AUGUST 21, 2000

AMENDED DEFINITIVE PLAN GREENWOOD II

LOCATED ON
UNION STREET
HOLDEN, MASSACHUSETTS

SCALE: 1"=40'

OWNED BY & PREPARED FOR

JACKSON WOODS INVESTMENTS, LLC.
87 MAIN STREET
RUTLAND, MA. 01543

New England Environmental Design, LLC

Environmental Consultants ■ Civil Engineering Consultants
Land Surveying Consultants
P.O. Box 376 Rutland, MA 01543
(508) 829-7222 Ph (508) 829-7522 Fax

REVISIONS

REV	DATE	COMMENT	BY
1	12/19/16	MULTIPLE REVISIONS	RMG
2	1/31/17	MULTIPLE REVISIONS	RMG
3	5/10/17	MULTIPLE REVISIONS	RMG
4	7/11/17	MULTIPLE REVISIONS	RMG

Certificate of No Appeal
Decision of the Town of Holden Planning Board approving this plan was recorded in the office of the Holden Town Clerk on
Date:
And no notice of appeal there from received by the Holden Town Clerk during the 20 days following.

Town Clerk Date

TYPICAL LEGEND

DRILL HOLE	⊙
IRON PIPE	○
CONCRETE BOUND	□
GRANITE BOUND	⊡
BOUNDARY LINE	
PROP. LOT LINE	
EASEMENT LINE	
SETBACK LINE	

GRAPHIC SCALE
40 0 40 80
(IN FEET)
1 inch = 40 ft.

I CERTIFY THAT THE PREPARATION OF THIS PLAN CONFORMS TO THE RULES AND REGULATIONS OF THE REGISTRY OF DEEDS OF THE COMMONWEALTH OF MASSACHUSETTS

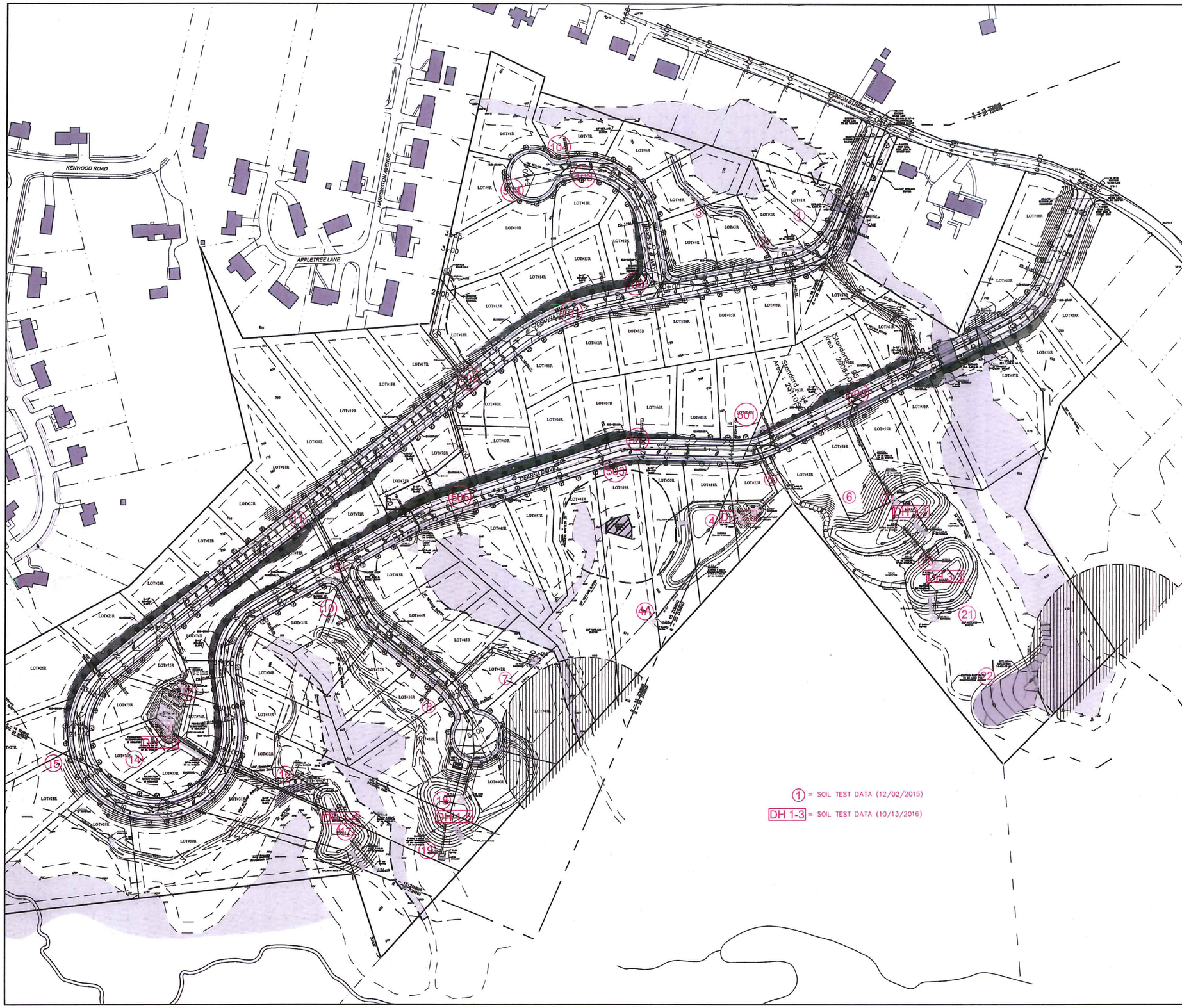
James B. Kalloch DATE: 7/11/17
James B. Kalloch - Professional Land Surveyor No. 10616

COMMONWEALTH OF MASSACHUSETTS JAMES B. KALLOCH No. 10616 REGISTERED PROFESSIONAL LAND SURVEYOR

Date: September 07, 2015
Drawn By: RMG
Checked By: JBK
Job #: 907-13

S-09

Sheet 9 of 9



REVISIONS

REV	DATE	COMMENT	BY
1	9/28/16	MULTIPLE REVISIONS	RMG
2	12/19/16	MULTIPLE REVISIONS	RMG
3	1/31/17	ADDITIONAL SOIL TESTS	RMG
4	5/10/17	ADDITIONAL SOIL TESTS	RMG

COMMONWEALTH OF MASSACHUSETTS
JAMES B. KALLOCH
No. 24532
REGISTERED PROFESSIONAL ENGINEER

James B. Kalloch 5/11/17

James B. Kalloch - PE No.24532

TYPICAL LEGEND

DRILL HOLE		EXIST. UTILITY POLE	
IRON PIPE		EXIST. CATCH BASIN	
CONCRETE BOUND		P. CATCH BASIN	
GRANITE BOUND		P. DRAIN MANHOLE	
BOUNDARY LINE		P. DRAINAGE LINE	
PROP. LOT LINE		P. SEWER MANHOLE	
EASEMENT LINE		P. SEWER CLEANOUT	
SETBACK LINE		P. SEWER LINE	
TREE LINE		PROPOSED HYDRANT	
P. CONTOUR LINE	700	PROP. GATE VALVE	H
EXIST. 10' CONTOUR		PROP. WATER LINE	W
EXIST. 2' CONTOUR		PROP. UTILITY LINE	E P & C
RETAINING WALL		GUARD RAIL	

THIS ENDORSEMENT MAKES NO DETERMINATION AS TO ZONING COMPLIANCE OR PLAN ACCURACY.

APPROVAL UNDER THE SUBDIVISION CONTROL LAW IS REQUIRED.

HOLDEN PLANNING BOARD:

Date: _____

Certificate of No Appeal

Decision of the Town of Holden Planning Board approving this plan was recorded in the office of the Holden Town Clerk on
Date:_____
And no notice of appeal there from received by the Holden Town Clerk during the 20 days following.

Town Clerk Date

AMENDED DEFINITIVE PLAN GREENWOOD II

LOCATED ON
UNION STREET
HOLDEN, MASSACHUSETTS

SCALE: 1" = 100'

OWNED BY & PREPARED FOR

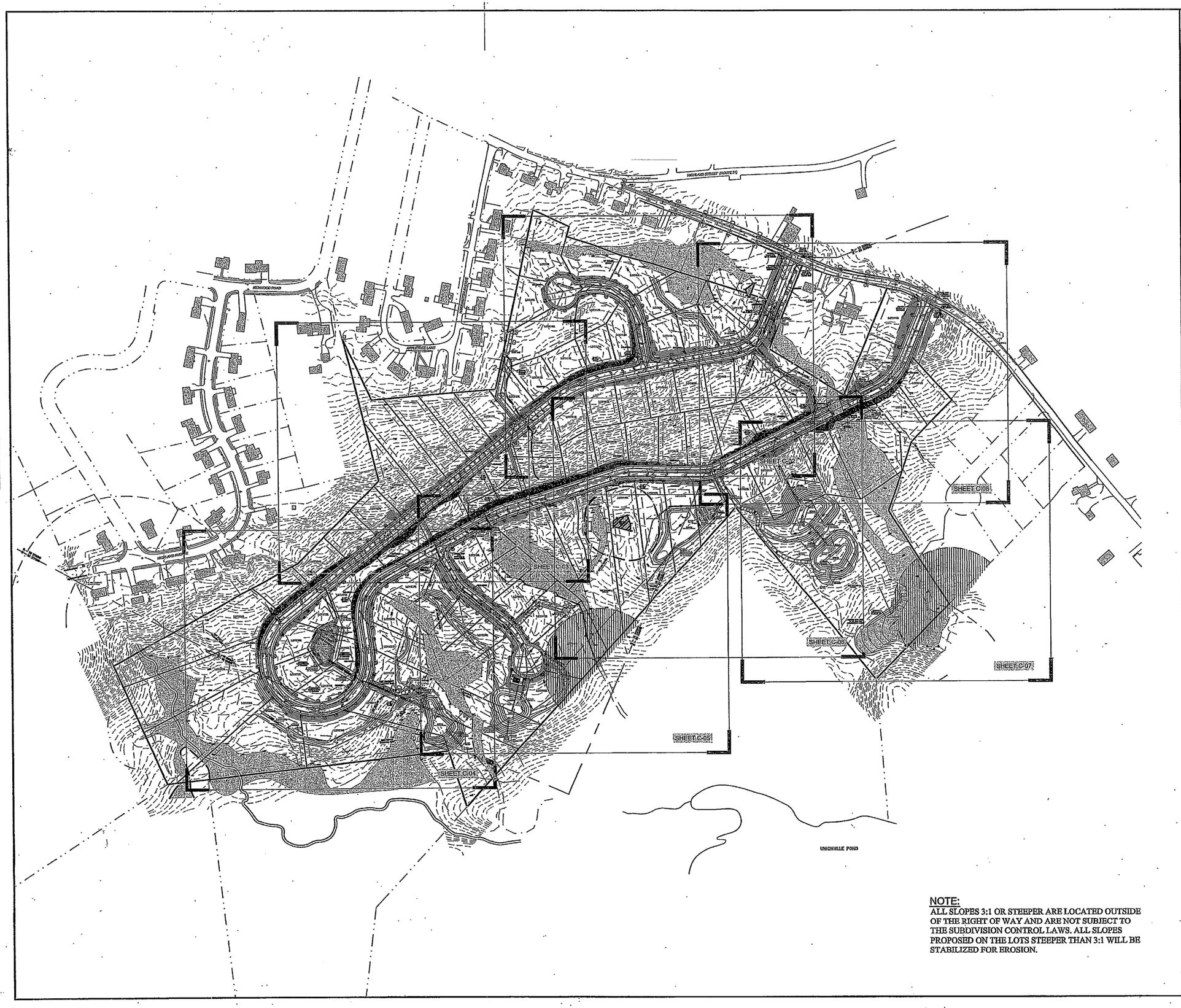
JACKSON WOODS INVESTMENTS, LLC.
87 MAIN STREET
RUTLAND, MA. 01543

New England Environmental Design, LLC
Environmental Consultants ■ Civil Engineering Consultants
Land Surveying Consultants
P.O. Box 376 Rutland, MA 01543
(508) 829-7222 Ph (508) 829-7522 Fax

Date: September 07, 2015
Drawn By: RMG
Checked By: JBK
Job #: 907-13

ST-1

Sheet 1 of 1



NOTE:
ALL SLOPES 3:1 OR STEEPER ARE LOCATED OUTSIDE OF THE RIGHT OF WAY AND ARE NOT SUBJECT TO THE SUBDIVISION CONTROL LAWS. ALL SLOPES PROPOSED ON THE LOTS STEEPER THAN 3:1 WILL BE STABILIZED FOR EROSION.

REVISIONS

REV	DATE	COMMENT	BY
1	1/31/17	MULTIPLE REVISIONS	RMG
2	2/27/17	MULTIPLE REVISIONS	RMG
3	5/10/17	MULTIPLE REVISIONS	RMG
4	7/11/17	MULTIPLE REVISIONS	RMG

COMMONWEALTH OF MASSACHUSETTS
JAMES B. KALLOCH
No. 24532
REGISTERED PROFESSIONAL ENGINEER

James B. Kalloch - PE No.24532

TYPICAL LEGEND

DRILL HOLE		EXIST. UTILITY POLE	
IRON PIPE		EXIST. CATCH BASIN	
CONCRETE BOUND		P. CATCH BASIN	
GRANITE BOUND		P. DRAIN MANHOLE	
BOUNDARY LINE		P. DRAINAGE LINE	
PROP. LOT LINE		P. SEWER MANHOLE	
EASEMENT LINE		P. SEWER CLEANOUT	
SETBACK LINE		P. SEWER LINE	
TREE LINE		PROPOSED HYDRANT	
P. CONTOUR LINE	100	PROP. GATE VALVE	
EXIST. 10' CONTOUR		PROP. WATER LINE	
EXIST. 2' CONTOUR		PROP. UTILITY LINE	
SUBDRAIN		GUARD RAIL	

THIS ENDORSEMENT MAKES NO DETERMINATION AS TO ZONING COMPLIANCE OR PLAN ACCURACY.

APPROVAL UNDER THE SUBDIVISION CONTROL LAW IS REQUIRED.

HOLDEN PLANNING BOARD:

Date: _____

Certificate of No Appeal
Decision of the Town of Holden Planning Board approving this plan was recorded in the office of the Holden Town Clerk on
Date: _____
And no notice of appeal there from received by the Holden Town Clerk during the 20 days following.

Town Clerk _____ Date _____

AMENDED DEFINITIVE PLAN GREENWOOD II

LOCATED ON
UNION STREET
HOLDEN, MASSACHUSETTS

SCALE: NOT TO SCALE

OWNED BY & PREPARED FOR

JACKSON WOODS INVESTMENTS, LLC.
87 MAIN STREET
RUTLAND, MA. 01543

New England Environmental Design, LLC
Environmental Consultants ■ Civil Engineering Consultants
Land Surveying Consultants
P.O. Box 376 Rutland, MA 01543
(508) 829-7222 Ph (508) 829-7522 Fax

Date: September 07, 2015
Drawn By: RMG
Checked By: JBK
Job #: 907-13 REV 8-17-17

C-01

Sheet 1 of 8

REVISIONS

REV	DATE	COMMENT	BY
1	9/19/17	MULTIPLE REVISIONS	RMG
2	11/09/17	MULTIPLE REVISIONS	RMG
3	3/01/18	REVISE SEWER LOCATION	RMG
4	5/04/18	REVISIONS PER WESTON & SAMPSON	RMG

COMMONWEALTH OF MASSACHUSETTS
JAMES B. KALLOCH
No. 16818
REGISTERED PROFESSIONAL LAND SURVEYOR

COMMONWEALTH OF MASSACHUSETTS
JAMES B. KALLOCH
CIVIL
No. 24532
REGISTERED PROFESSIONAL ENGINEER

James B. Kalloch

James B. Kalloch - PE No.24532

TYPICAL LEGEND

DRILL HOLE		EXIST. UTILITY POLE	
IRON PIPE		EXIST. CATCH BASIN	
CONCRETE BOUND		P. CATCH BASIN	
GRANITE BOUND		P. DRAIN MANHOLE	
BOUNDARY LINE		P. DRAINAGE LINE	
PROP. LOT LINE		P. SEWER MANHOLE	
EASEMENT LINE		P. SEWER CLEANOUT	
SETBACK LINE		P. SEWER LINE	
TREE LINE		PROPOSED HYDRANT	
P. CONTOUR LINE	700	PROP. GATE VALVE	
EXIST. 10' CONTOUR		PROP. WATER LINE	
EXIST. 2' CONTOUR		PROP. UTILITY LINE	
SUBDRAIN		GUARD RAIL	

THIS ENDORSEMENT MAKES NO DETERMINATION AS TO ZONING COMPLIANCE OR PLAN ACCURACY.

APPROVAL UNDER THE SUBDIVISION CONTROL LAW IS REQUIRED.

HOLDEN PLANNING BOARD:

Date: _____

Certificate of No Appeal

Decision of the Town of Holden Planning Board approving this plan was recorded in the office of the Holden Town Clerk on

Date: _____

And no notice of appeal there from received by the Holden Town Clerk during the 20 days following.

Town Clerk _____ Date _____

AMENDED DEFINITIVE PLAN GREENWOOD II

LOCATED ON
UNION STREET
HOLDEN, MASSACHUSETTS

SCALE: 1" = 40'

OWNED BY & PREPARED FOR

JACKSON WOODS INVESTMENTS, LLC.
87 MAIN STREET
RUTLAND, MA. 01543

New England Environmental Design, LLC

Environmental Consultants ■ Civil Engineering Consultants
Land Surveying Consultants
P.O. Box 376 Rutland, MA 01543
(508) 829-7222 Ph (508) 829-7522 Fax

Date: September 07, 2015	C-02
Drawn By: RMG	
Checked By: JBK	
Job #: 907-13	Sheet 2 of 8

REVISIONS

REV	DATE	COMMENT	BY
1	9/19/17	MULTIPLE REVISIONS	RMG
2	11/09/17	MULTIPLE REVISIONS	RMG
3	3/01/18	REVISE SEWER LOCATION	RMG
4	5/04/18	REVISIONS PER WESTON & SAMPSON	RMG

COMMONWEALTH OF MASSACHUSETTS
JAMES B. KALLOCH
CIVIL
No. 24532
REGISTERED PROFESSIONAL ENGINEER

James B. Kalloch - PE No.24532

TYPICAL LEGEND

DRILL HOLE		EXIST. UTILITY POLE	
IRON PIPE		EXIST. CATCH BASIN	
CONCRETE BOUND		P. CATCH BASIN	
GRANITE BOUND		P. DRAIN MANHOLE	
BOUNDARY LINE		P. DRAINAGE LINE	
PROP. LOT LINE		P. SEWER MANHOLE	
EASEMENT LINE		P. SEWER CLEANOUT	
SETBACK LINE		P. SEWER LINE	
TREE LINE		PROPOSED HYDRANT	
P. CONTOUR LINE	700	PROP. GATE VALVE	
EXIST. 10' CONTOUR		PROP. WATER LINE	
EXIST. 2' CONTOUR		PROP. UTILITY LINE	
SUBDRAIN		GUARD RAIL	

THIS ENDORSEMENT MAKES NO DETERMINATION AS TO ZONING COMPLIANCE OR PLAN ACCURACY.

APPROVAL UNDER THE SUBDIVISION CONTROL LAW IS REQUIRED.

HOLDEN PLANNING BOARD:

Date: _____

Certificate of No Appeal

Decision of the Town of Holden Planning Board approving this plan was recorded in the office of the Holden Town Clerk on Date: _____

And no notice of appeal there from received by the Holden Town Clerk during the 20 days following.

Town Clerk Date

AMENDED DEFINITIVE PLAN GREENWOOD II

LOCATED ON
UNION STREET
HOLDEN, MASSACHUSETTS

SCALE: 1" = 40'

OWNED BY & PREPARED FOR

JACKSON WOODS INVESTMENTS, LLC.
87 MAIN STREET
RUTLAND, MA. 01543

New England Environmental Design, LLC

Environmental Consultants ■ Civil Engineering Consultants
Land Surveying Consultants
P.O. Box 376 Rutland, MA 01543
(508) 829-7222 Ph (508) 829-7522 Fax

Date: September 07, 2015
Drawn By: RMG
Checked By: JBK
Job #: 907-13

C-03

REVISIONS

REV	DATE	COMMENT	BY
1	9/19/17	MULTIPLE REVISIONS	RMG
2	11/09/17	MULTIPLE REVISIONS	RMG
3	3/01/18	REVISE SEWER LOCATION	RMG
4	5/04/18	REVISIONS PER WESTON & SAMPSON	RMG

COMMONWEALTH OF MASSACHUSETTS
JAMES B. KALLOCH
CIVIL
No. 24532
REGISTERED PROFESSIONAL ENGINEER

James B. Kalloch

James B. Kalloch - PE No.24532

TYPICAL LEGEND

DRILL HOLE		EXIST. UTILITY POLE	
IRON PIPE		EXIST. CATCH BASIN	
CONCRETE BOUND		P. CATCH BASIN	
GRANITE BOUND		P. DRAIN MANHOLE	
BOUNDARY LINE		P. DRAINAGE LINE	
PROP. LOT LINE		P. SEWER MANHOLE	
EASEMENT LINE		P. SEWER CLEANOUT	
SETBACK LINE		P. SEWER LINE	
TREE LINE		PROPOSED HYDRANT	
P. CONTOUR LINE	780	PROP. GATE VALVE	
EXIST. 10' CONTOUR		PROP. WATER LINE	
EXIST. 2' CONTOUR		PROP. UTILITY LINE	
SUBDRAIN		GUARD RAIL	

THIS ENDORSEMENT MAKES NO DETERMINATION AS TO ZONING COMPLIANCE OR PLAN ACCURACY.

APPROVAL UNDER THE SUBDIVISION CONTROL LAW IS REQUIRED.

HOLDEN PLANNING BOARD:

Date: _____

Certificate of No Appeal

Decision of the Town of Holden Planning Board approving this plan was recorded in the office of the Holden Town Clerk on

Date: _____

And no notice of appeal there from received by the Holden Town Clerk during the 20 days following.

Town Clerk _____ Date _____

AMENDED DEFINITIVE PLAN
GREENWOOD II

LOCATED ON
UNION STREET
HOLDEN, MASSACHUSETTS

SCALE: 1" = 40'

OWNED BY & PREPARED FOR

JACKSON WOODS INVESTMENTS, LLC.
87 MAIN STREET
RUTLAND, MA. 01543

New England Environmental Design, LLC

Environmental Consultants ■ Civil Engineering Consultants
Land Surveying Consultants
P.O. Box 376 Rutland, MA 01543
(508) 829-7222 Ph (508) 829-7522 Fax

Date: September 07, 2015	C-04
Drawn By: RMG	
Checked By: JBK	
Job #: 907-13	Sheet 4 of 8

REVISIONS

REV	DATE	COMMENT	BY
1	11/09/17	MULTIPLE REVISIONS	RMG
2	3/01/18	REVISE SEWER LOCATION	RMG
3	5/04/18	REVISIONS PER WESTON & SAMPSON	RMG
4	6/01/18	REVISIONS PER WESTON & SAMPSON	RMG

COMMONWEALTH OF MASSACHUSETTS
JAMES B. KALLOCH
CIVIL
No. 24532
REGISTERED PROFESSIONAL ENGINEER

James B. Kalloch

James B. Kalloch - PE No.24532

TYPICAL LEGEND

DRILL HOLE		EXIST. UTILITY POLE	
IRON PIPE		EXIST. CATCH BASIN	
CONCRETE BOUND		P. CATCH BASIN	
GRANITE BOUND		P. DRAIN MANHOLE	
BOUNDARY LINE		P. DRAINAGE LINE	
PROP. LOT LINE		P. SEWER MANHOLE	
EASEMENT LINE		P. SEWER CLEANOUT	
SETBACK LINE		P. SEWER LINE	
TREE LINE		PROPOSED HYDRANT	
P. CONTOUR LINE	720	PROP. GATE VALVE	
EXIST. 10' CONTOUR		PROP. WATER LINE	
EXIST. 2' CONTOUR		PROP. UTILITY LINE	
SUBDRAIN		GUARD RAIL	

THIS ENDORSEMENT MAKES NO DETERMINATION AS TO ZONING COMPLIANCE OR PLAN ACCURACY.

APPROVAL UNDER THE SUBDIVISION CONTROL LAW IS REQUIRED.

HOLDEN PLANNING BOARD:

Date: _____

Certificate of No Appeal

Decision of the Town of Holden Planning Board approving this plan was recorded in the office of the Holden Town Clerk on Date: _____

And no notice of appeal there from received by the Holden Town Clerk during the 20 days following.

Town Clerk _____ Date _____

AMENDED DEFINITIVE PLAN GREENWOOD II

LOCATED ON
UNION STREET
HOLDEN, MASSACHUSETTS

SCALE: 1" = 40'

OWNED BY & PREPARED FOR

JACKSON WOODS INVESTMENTS, LLC.
87 MAIN STREET
RUTLAND, MA. 01543

New England Environmental Design, LLC

Environmental Consultants ■ Civil Engineering Consultants
Land Surveying Consultants
P.O. Box 376 Rutland, MA 01543
(508) 829-7222 Ph (508) 829-7522 Fax

Date: September 07, 2015
Drawn By: RMG
Checked By: JBK
Job #: 907-13

C-05

REVISIONS

REV	DATE	COMMENT	BY
1	8/19/17	MULTIPLE REVISIONS	RMG
2	11/03/17	MULTIPLE REVISIONS	RMG
3	3/01/18	REVISE SEWER LOCATION	RMG
4	5/04/18	REVISIONS PER WESTON & SAMPSON	RMG

COMMONWEALTH OF MASSACHUSETTS
JAMES B. KALLOCH
CIVIL
No. 24532
REGISTERED PROFESSIONAL ENGINEER

James B. Kalloch

James B. Kalloch - PE No.24532

TYPICAL LEGEND

DRILL HOLE		EXIST. UTILITY POLE	
IRON PIPE		EXIST. CATCH BASIN	
CONCRETE BOUND		P. CATCH BASIN	
GRANITE BOUND		P. DRAIN MANHOLE	
BOUNDARY LINE		P. DRAINAGE LINE	
PROP. LOT LINE		P. SEWER MANHOLE	
EASEMENT LINE		P. SEWER CLEANOUT	
SETBACK LINE		P. SEWER LINE	
TREE LINE		PROPOSED HYDRANT	
P. CONTOUR LINE	700	PROP. GATE VALVE	
EXIST. 10' CONTOUR		PROP. WATER LINE	
EXIST. 2' CONTOUR		PROP. UTILITY LINE	
SUBDRAIN		GUARD RAIL	

THIS ENDORSEMENT MAKES NO DETERMINATION AS TO ZONING COMPLIANCE OR PLAN ACCURACY.

APPROVAL UNDER THE SUBDIVISION CONTROL LAW IS REQUIRED.

HOLDEN PLANNING BOARD:

Date: _____

Certificate of No Appeal

Decision of the Town of Holden Planning Board approving this plan was recorded in the office of the Holden Town Clerk on

Date: _____

And no notice of appeal there from received by the Holden Town Clerk during the 20 days following.

Town Clerk _____ Date _____

AMENDED DEFINITIVE PLAN GREENWOOD II

LOCATED ON
UNION STREET
HOLDEN, MASSACHUSETTS

SCALE: 1" = 40'

OWNED BY & PREPARED FOR

JACKSON WOODS INVESTMENTS, LLC.
87 MAIN STREET
RUTLAND, MA. 01543

New England Environmental Design, LLC

Environmental Consultants ■ Civil Engineering Consultants
Land Surveying Consultants
P.O. Box 376 Rutland, MA 01543
(508) 829-7222 Ph (508) 829-7522 Fax

Date: September 07, 2015	C-06
Drawn By: RMG	
Checked By: JBK	
Job #: 907-13	Sheet 6 of 8

REVISIONS

REV	DATE	COMMENT	BY
1	9/19/17	MULTIPLE REVISIONS	RMG
2	11/09/17	MULTIPLE REVISIONS	RMG
3	3/01/18	REVISE SEWER LOCATION	RMG
4	5/04/18	REVISIONS PER WESTON & SAMPSON	RMG

COMMONWEALTH OF MASSACHUSETTS
JAMES B. KALLOCH
CIVIL
No. 24532
REGISTERED PROFESSIONAL ENGINEER

James B. Kalloch - PE No.24532

TYPICAL LEGEND

DRILL HOLE		EXIST. UTILITY POLE	
IRON PIPE		EXIST. CATCH BASIN	
CONCRETE BOUND		P. CATCH BASIN	
GRANITE BOUND		P. DRAIN MANHOLE	
BOUNDARY LINE		P. DRAINAGE LINE	
FROR LOT LINE		P. SEWER MANHOLE	
EASEMENT LINE		P. SEWER CLEANOUT	
SETBACK LINE		P. SEWER LINE	
TREE LINE		PROPOSED HYDRANT	
P. CONTOUR LINE	720	PROP. GATE VALVE	
EXIST. 10' CONTOUR		PROP. WATER LINE	
EXIST. 2' CONTOUR		PROP. UTILITY LINE	
SUBDRAIN		GUARD RAIL	

THIS ENDORSEMENT MAKES NO DETERMINATION AS TO ZONING COMPLIANCE OR PLAN ACCURACY.

APPROVAL UNDER THE SUBDIVISION CONTROL LAW IS REQUIRED.

HOLDEN PLANNING BOARD:

Date: _____

Certificate of No Appeal

Decision of the Town of Holden Planning Board approving this plan was recorded in the office of the Holden Town Clerk on
Date: _____
And no notice of appeal there from received by the Holden Town Clerk during the 20 days following.

Town Clerk _____ Date _____

AMENDED DEFINITIVE PLAN GREENWOOD II

LOCATED ON
UNION STREET
HOLDEN, MASSACHUSETTS

SCALE: 1" = 40'

OWNED BY & PREPARED FOR

JACKSON WOODS INVESTMENTS, LLC.
87 MAIN STREET
RUTLAND, MA. 01543

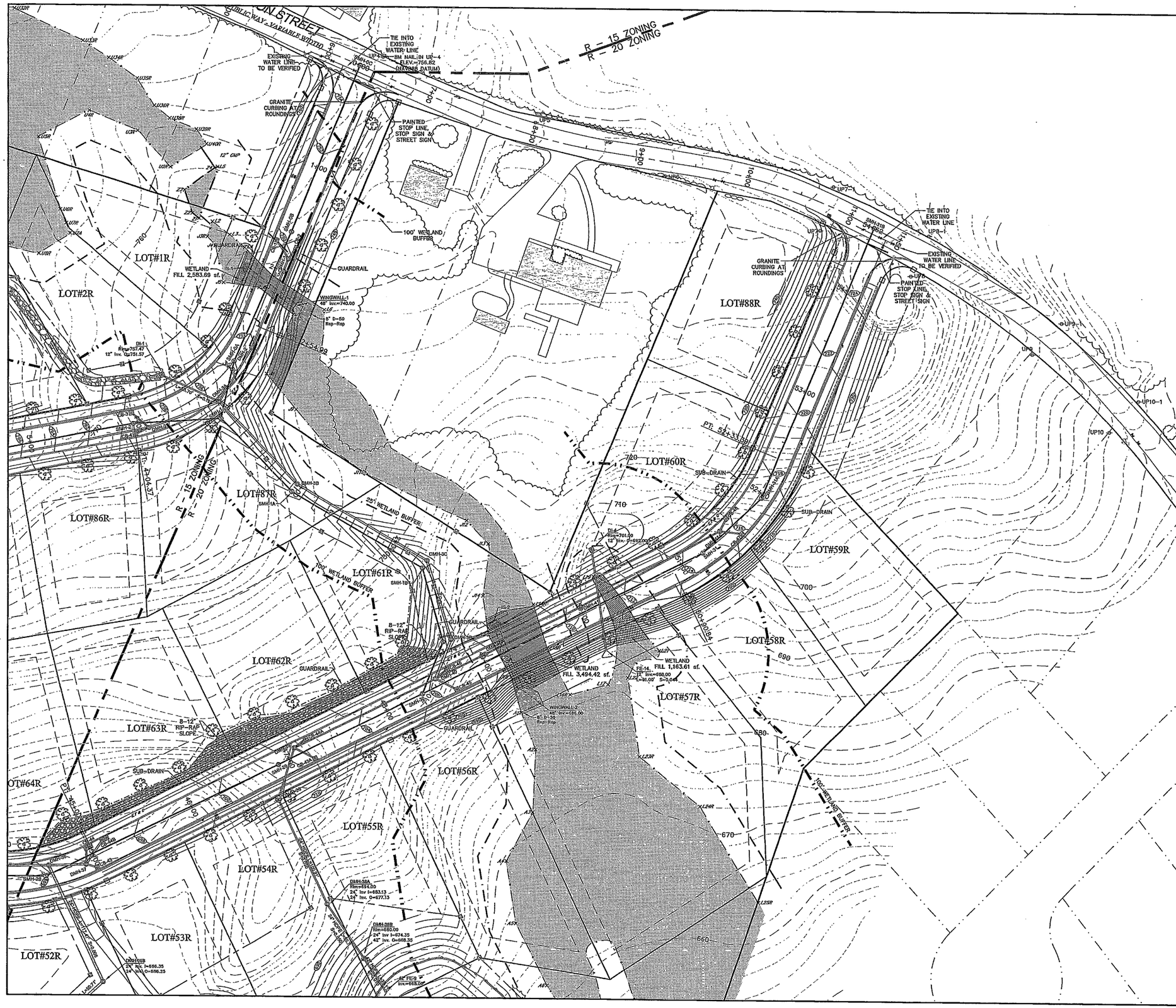
New England Environmental Design, LLC

Environmental Consultants ■ Civil Engineering Consultants
Land Surveying Consultants
P.O. Box 376 Rutland, MA 01543
(508) 829-7222 Ph (508) 829-7522 Fax

Date: September 07, 2015
Drawn By: RMG
Checked By: JBK
Job #: 907-13

C-07

Sheet 7 of 8



REVISIONS

REV	DATE	COMMENT	BY
1	9/19/17	MULTIPLE REVISIONS	RMG
2	11/09/17	MULTIPLE REVISIONS	RMG
3	3/01/18	REVISE SEWER LOCATION	RMG
4	6/04/18	REVISIONS PER WESTON & SAMPSON	RMG

COMMONWEALTH OF MASSACHUSETTS
JAMES B. KALLOCH
CIVIL
No. 24532
REGISTERED PROFESSIONAL ENGINEER

James B. Kalloch - PE No.24532

TYPICAL LEGEND

DRILL HOLE		EXIST. UTILITY POLE	
IRON PIPE		EXIST. CATCH BASIN	
CONCRETE BOUND		P. CATCH BASIN	
GRANITE BOUND		P. DRAIN MANHOLE	
BOUNDARY LINE		P. DRAINAGE LINE	
PROP. LOT LINE		P. SEWER MANHOLE	
EASEMENT LINE		P. SEWER CLEANOUT	
SETBACK LINE		P. SEWER LINE	
TREE LINE		PROPOSED HYDRANT	
P. CONTOUR LINE	720	PROP. GATE VALVE	
EXIST. 10' CONTOUR		PROP. WATER LINE	
EXIST. 2' CONTOUR		PROP. UTILITY LINE	
SUBDRAIN		GUARD RAIL	

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AMENDED DEFINITIVE PLAN GREENWOOD II

LOCATED ON
UNION STREET
HOLDEN, MASSACHUSETTS

SCALE: 1" = 40'

OWNED BY & PREPARED FOR

JACKSON WOODS INVESTMENTS, LLC.
87 MAIN STREET
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Date: September 07, 2015
Drawn By: RMG
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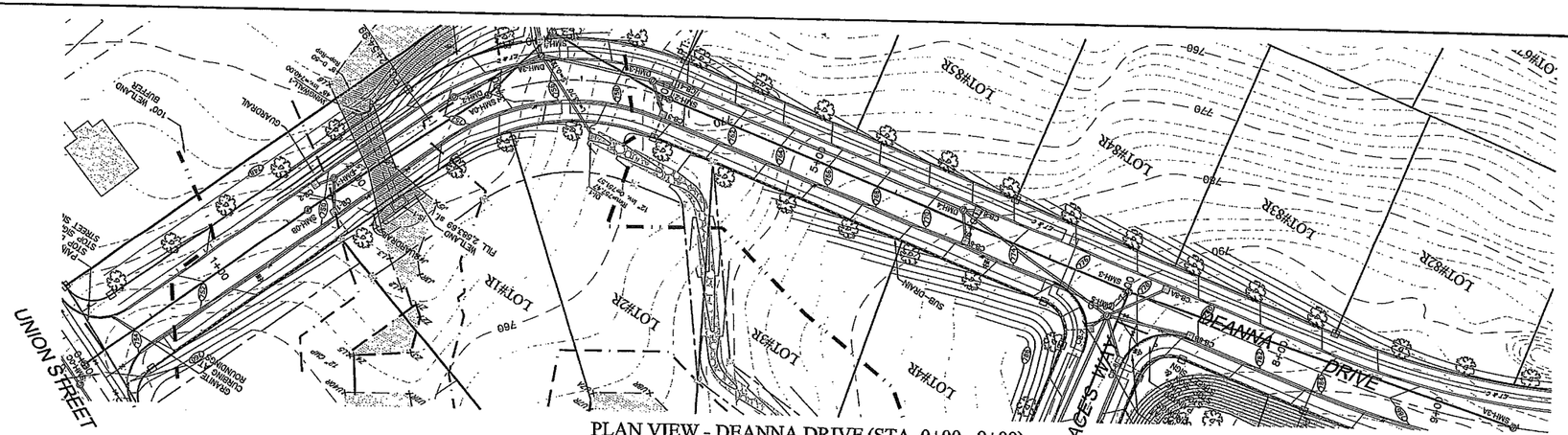
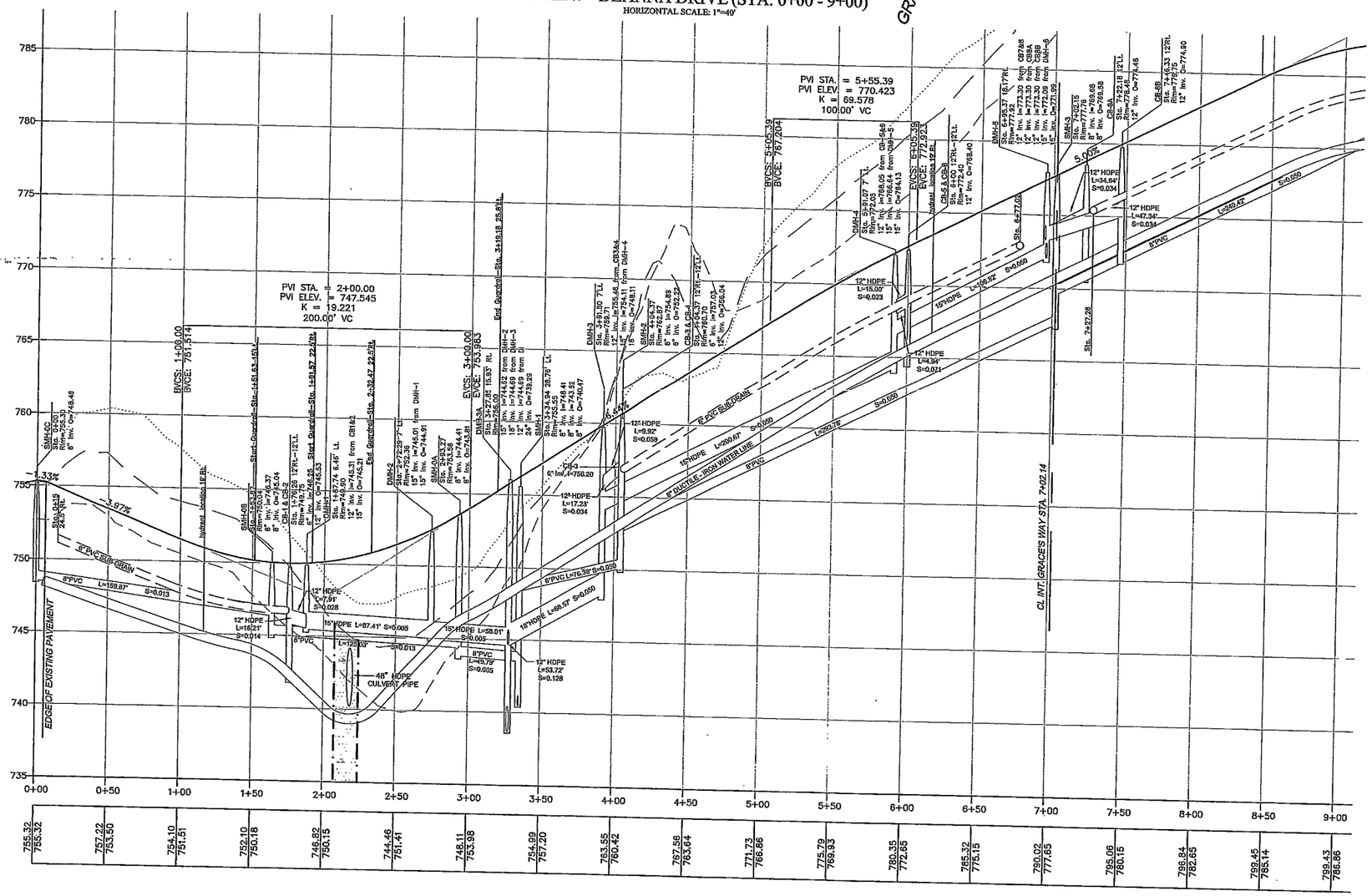
Job #: 907-13

C-08



PLAN VIEW - DEANNA DRIVE (STA. 0+00 - 9+00)

HORIZONTAL SCALE: 1"=40'



PROFILE VIEW

HORIZONTAL SCALE: 1"=40'

VERTICAL SCALE: 1"=4'

REVISIONS

REV	DATE	COMMENT	BY
1	09/07/17	MULTIPLE REVISIONS	RMG
2	9/12/17	MULTIPLE REVISIONS	RMG
3	9/19/17	MULTIPLE REVISIONS	RMG
4	11/03/17	MULTIPLE REVISIONS	RMG

COMMONWEALTH OF MASSACHUSETTS
JAMES B. KALLOCH
No. 24532
REGISTERED PROFESSIONAL ENGINEER

James B. Kalloch - PE No.24532

LEGEND

Existing cl
Existing lt
Existing rt
Proposed cl

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Town Clerk Date

AMENDED DEFINITIVE PLAN GREENWOOD II

LOCATED ON
UNION STREET
HOLDEN, MASSACHUSETTS

SCALE: AS NOTED

OWNED BY & PREPARED FOR

JACKSON WOODS INVESTMENTS, LLC.
87 MAIN STREET
RUTLAND, MA. 01543

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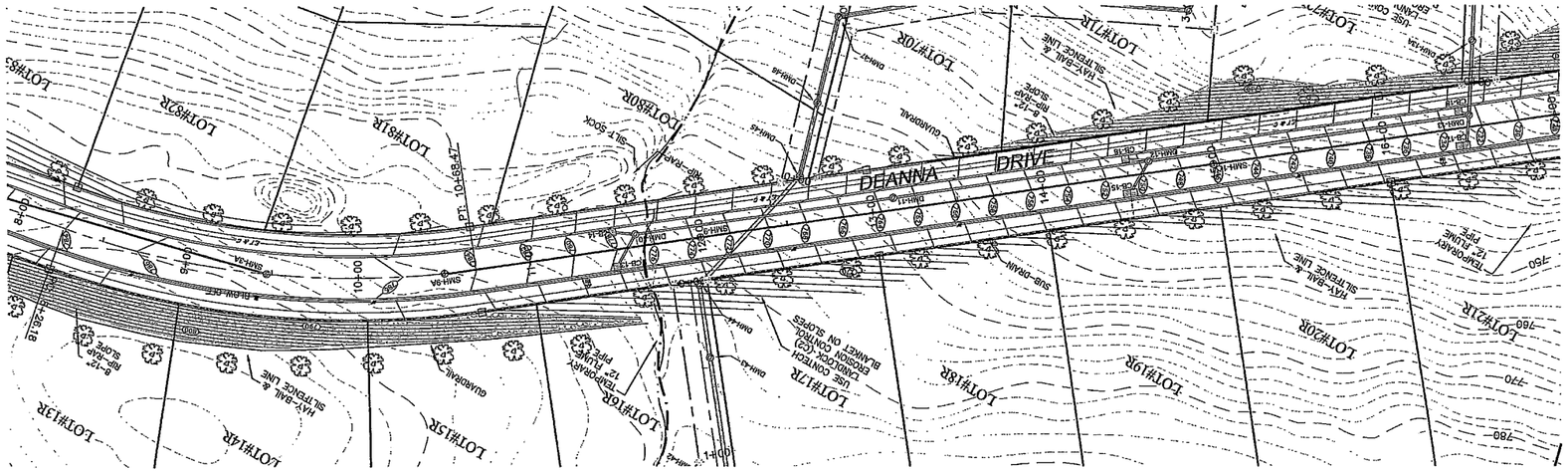
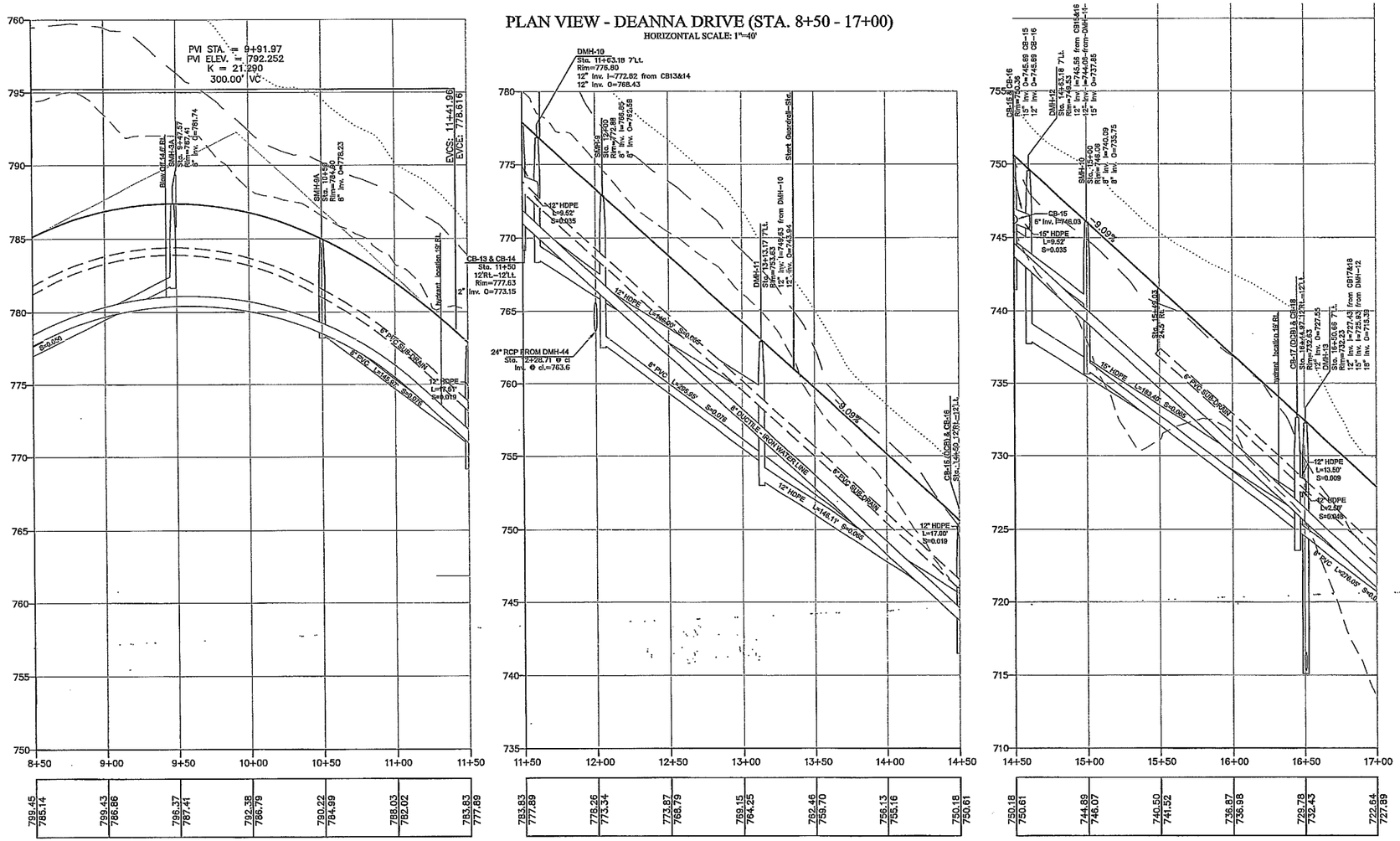
Date: September 07, 2015
Drawn By: RMG
Checked By: JBK
Job #: 907-13

P-01



PLAN VIEW - DEANNA DRIVE (STA. 8+50 - 17+00)

HORIZONTAL SCALE: 1"=40'



PROFILE VIEW

HORIZONTAL SCALE: 1"=40'
VERTICAL SCALE: 1"=4'

REVISIONS

REV	DATE	COMMENT	BY
1	7/11/17	MULTIPLE REVISIONS	RMG
2	9/07/17	MULTIPLE REVISIONS	RMG
3	9/19/17	MULTIPLE REVISIONS	RMG
4	11/03/17	MULTIPLE REVISIONS	RMG

COMMONWEALTH OF MASSACHUSETTS
JAMES B. KALLOCH
No. 24532
REGISTERED PROFESSIONAL ENGINEER

James B. Kalloch - PE No.24532

LEGEND

Existing cl
Existing lt
Existing rt
Proposed cl

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AMENDED DEFINITIVE PLAN GREENWOOD II

LOCATED ON
UNION STREET
HOLDEN, MASSACHUSETTS

SCALE: AS NOTED

OWNED BY & PREPARED FOR

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RUTLAND, MA. 01543

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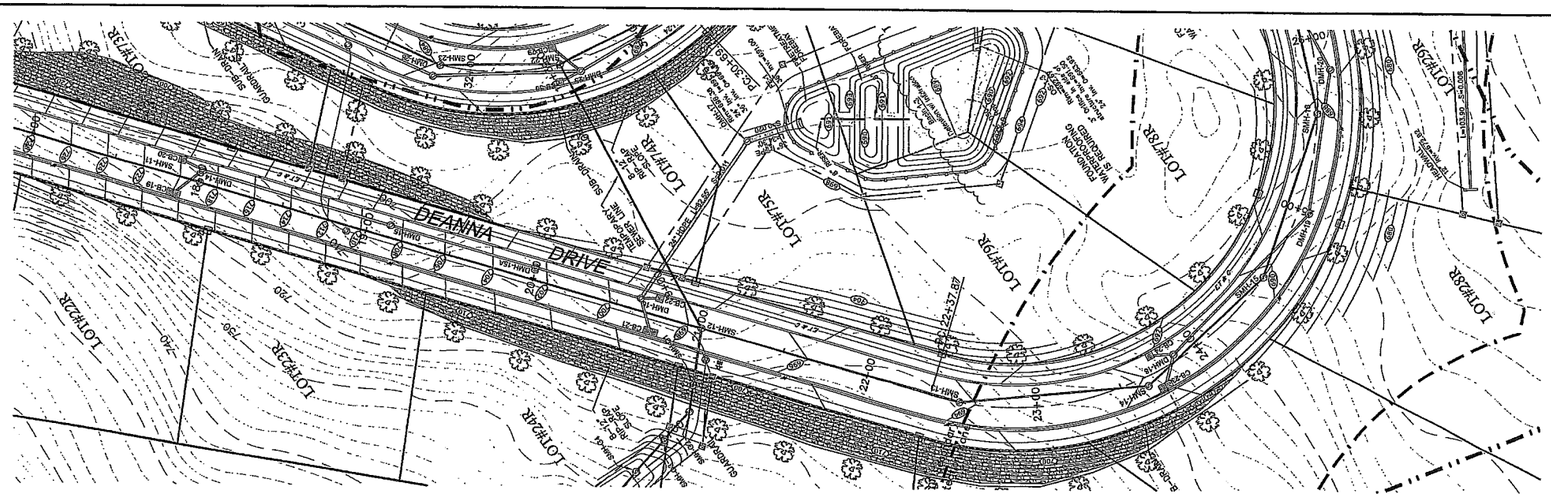
Date: September 07, 2015
Drawn By: RMG
Checked By: JBK
Job #: 907-13

P-02

Sheet 2 of 15


DEANNA DRIVE
LOT#2BR
LOT#3BR
LOT#4BR
LOT#5BR
LOT#6BR
LOT#7BR
LOT#8BR
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LOT#10BR
LOT#11BR
LOT#12BR
LOT#13BR
LOT#14BR
LOT#15BR
LOT#16BR
LOT#17BR
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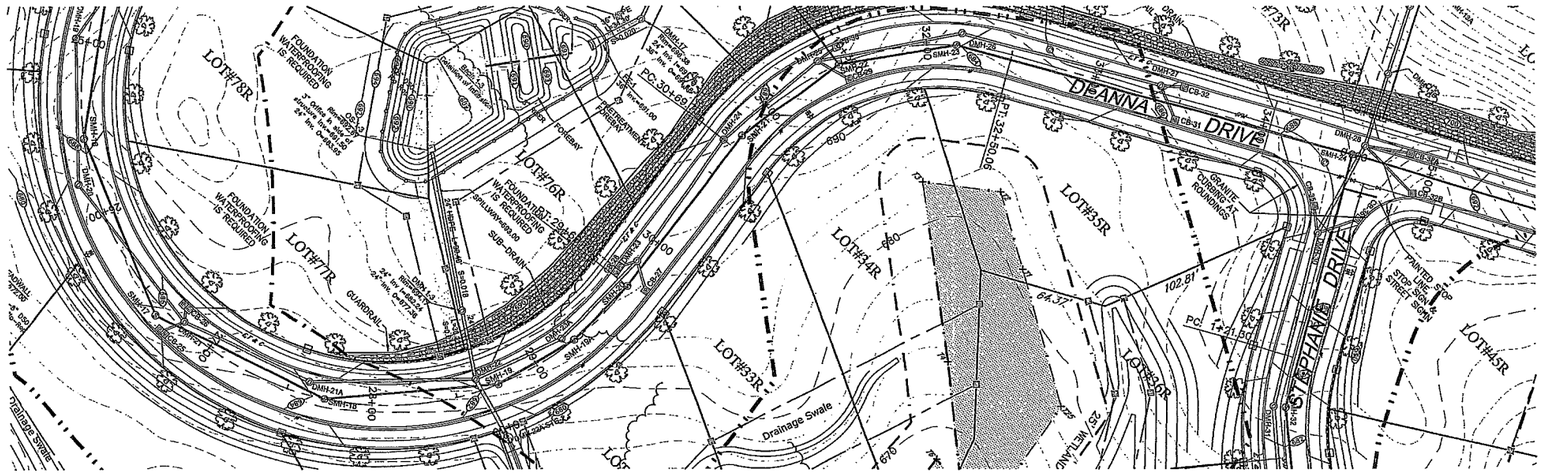
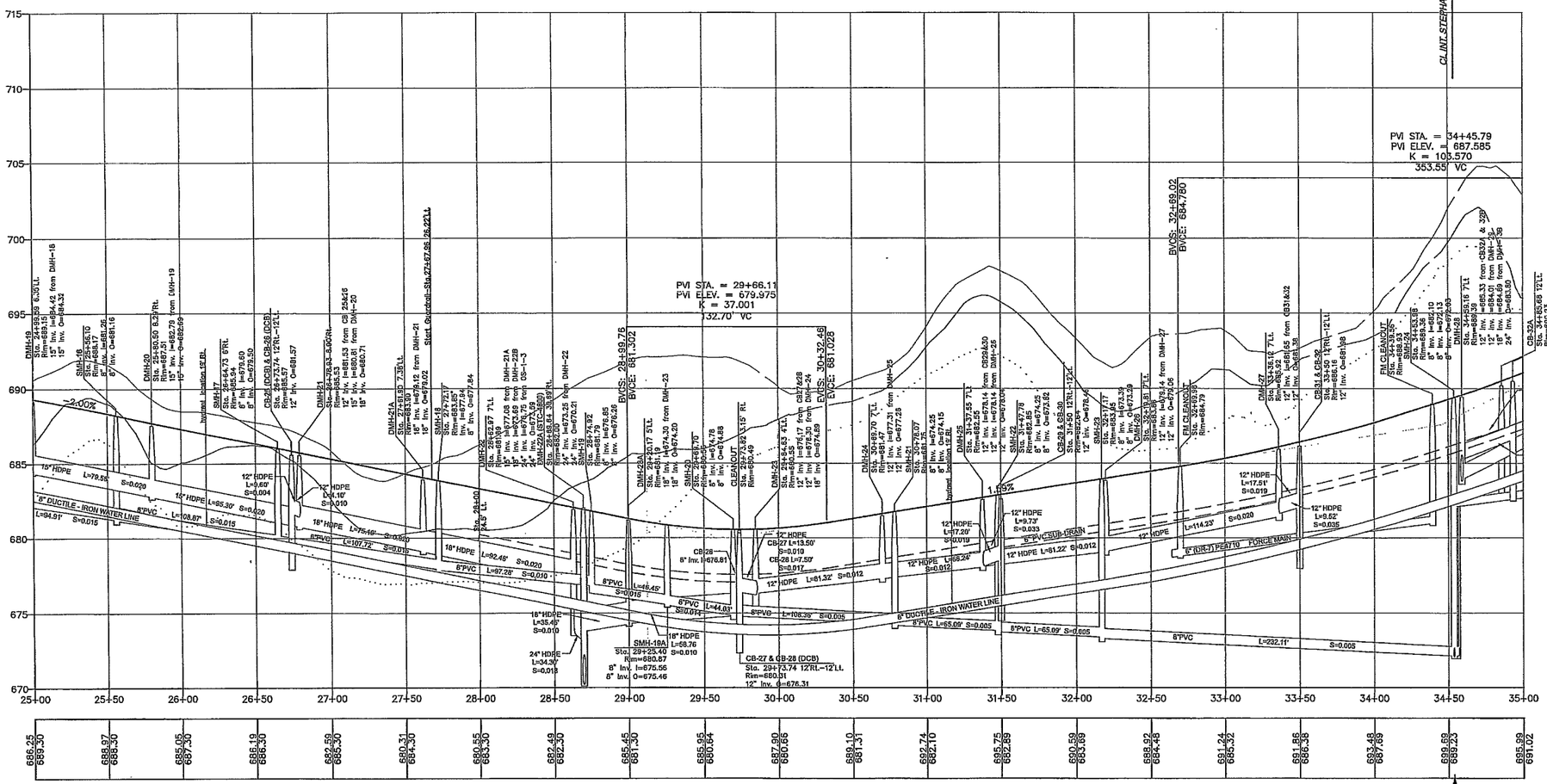


PLAN VIEW - DEANNA DRIVE (STA. 25+00 - 35+00)

HORIZONTAL SCALE: 1"=40'



PROFILE VIEW

HORIZONTAL SCALE: 1"=40'
VERTICAL SCALE: 1"=4'

REVISIONS

REV	DATE	COMMENT	BY
1	9/19/17	MULTIPLE REVISIONS	RMG
2	11/09/17	MULTIPLE REVISIONS	RMG
3	3/01/18	REVISE SEWER LOCATION	RMG
4	5/04/18	REVISIONS PER WESTON & SAMPSON	RMG

COMMONWEALTH OF MASSACHUSETTS
JAMES B. KALLOCH
CIVIL
No. 24532
REGISTERED PROFESSIONAL ENGINEER

James B. Kalloch - PE No.24532

LEGEND

Existing cl
Existing lt
Existing rt
Proposed cl

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APPROVAL UNDER THE SUBDIVISION CONTROL LAW IS REQUIRED.

HOLDEN PLANNING BOARD:

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Town Clerk Date

AMENDED DEFINITIVE PLAN GREENWOOD II

LOCATED ON
UNION STREET
HOLDEN, MASSACHUSETTS

SCALE: AS NOTED

OWNED BY & PREPARED FOR

JACKSON WOODS INVESTMENTS, LLC.
87 MAIN STREET
RUTLAND, MA. 01543

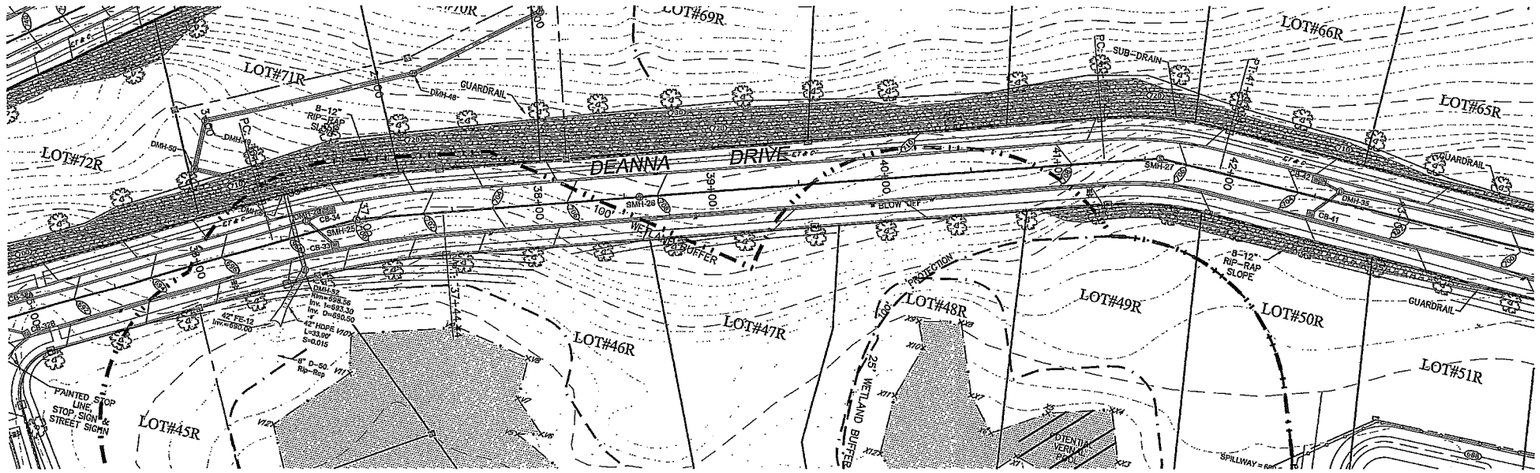
New England Environmental Design, LLC

Environmental Consultants ■ Civil Engineering Consultants
Land Surveying Consultants
P.O. Box 376 Rutland, MA 01543
(508) 829-7222 Ph (508) 829-7522 Fax

Date: September 07, 2015
Drawn By: RMG
Checked By: JBK
Job #: 907-13

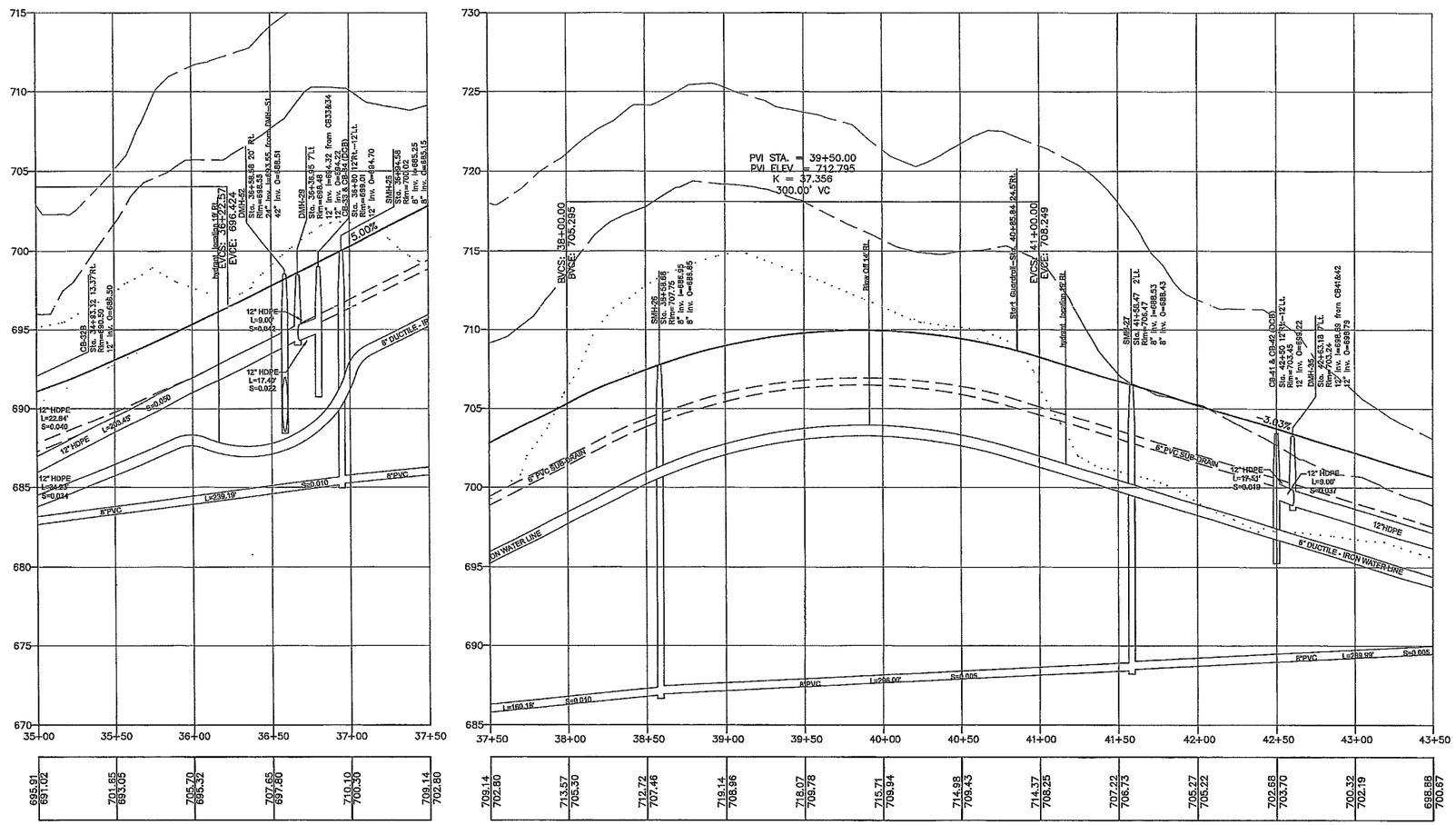
P-04

Sheet 4 of 15



PLAN VIEW - DEANNA DRIVE (STA. 35+00 - 43+50)

HORIZONTAL SCALE: 1"=40'



PROFILE VIEW

HORIZONTAL SCALE: 1"=40'
VERTICAL SCALE: 1"=4'

REVISIONS

REV	DATE	COMMENT	BY
1	9/19/17	MULTIPLE REVISIONS	RMG
2	11/03/17	MULTIPLE REVISIONS	RMG
3	3/01/18	REVISE SEWER LOCATION	RMG
4	5/04/18	REVISIONS PER WESTON & SAMPSON	RMG

COMMONWEALTH OF MASSACHUSETTS
JAMES B. KALLOCH
CIVIL
No. 24532
REGISTERED PROFESSIONAL ENGINEER

James B. Kalloch - PE No.24532

LEGEND

Existing cl
Existing lt
Existing rt
Proposed cl

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Date: _____

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AMENDED DEFINITIVE PLAN GREENWOOD II

LOCATED ON
UNION STREET
HOLDEN, MASSACHUSETTS

SCALE: AS NOTED

OWNED BY & PREPARED FOR

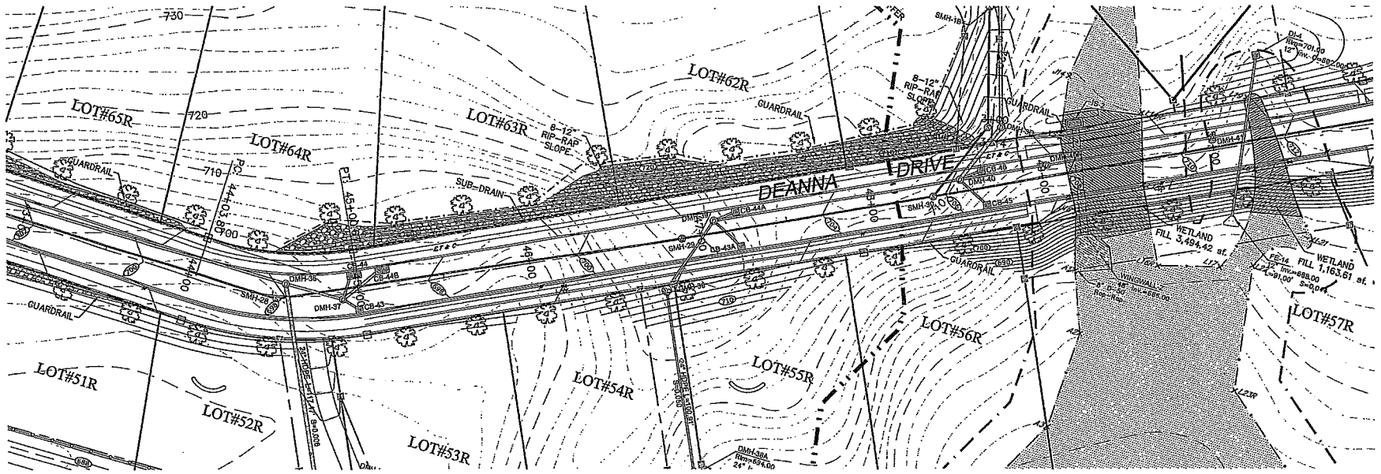
JACKSON WOODS INVESTMENTS, LLC.
87 MAIN STREET
RUTLAND, MA. 01543

New England Environmental Design, LLC
Environmental Consultants ■ Civil Engineering Consultants
Land Surveying Consultants
P.O. Box 376 Rutland, MA 01543
(508) 829-7222 Ph (508) 829-7522 Fax

Date: September 07, 2015
Drawn By: RMG
Checked By: JBK
Job #: 907-13

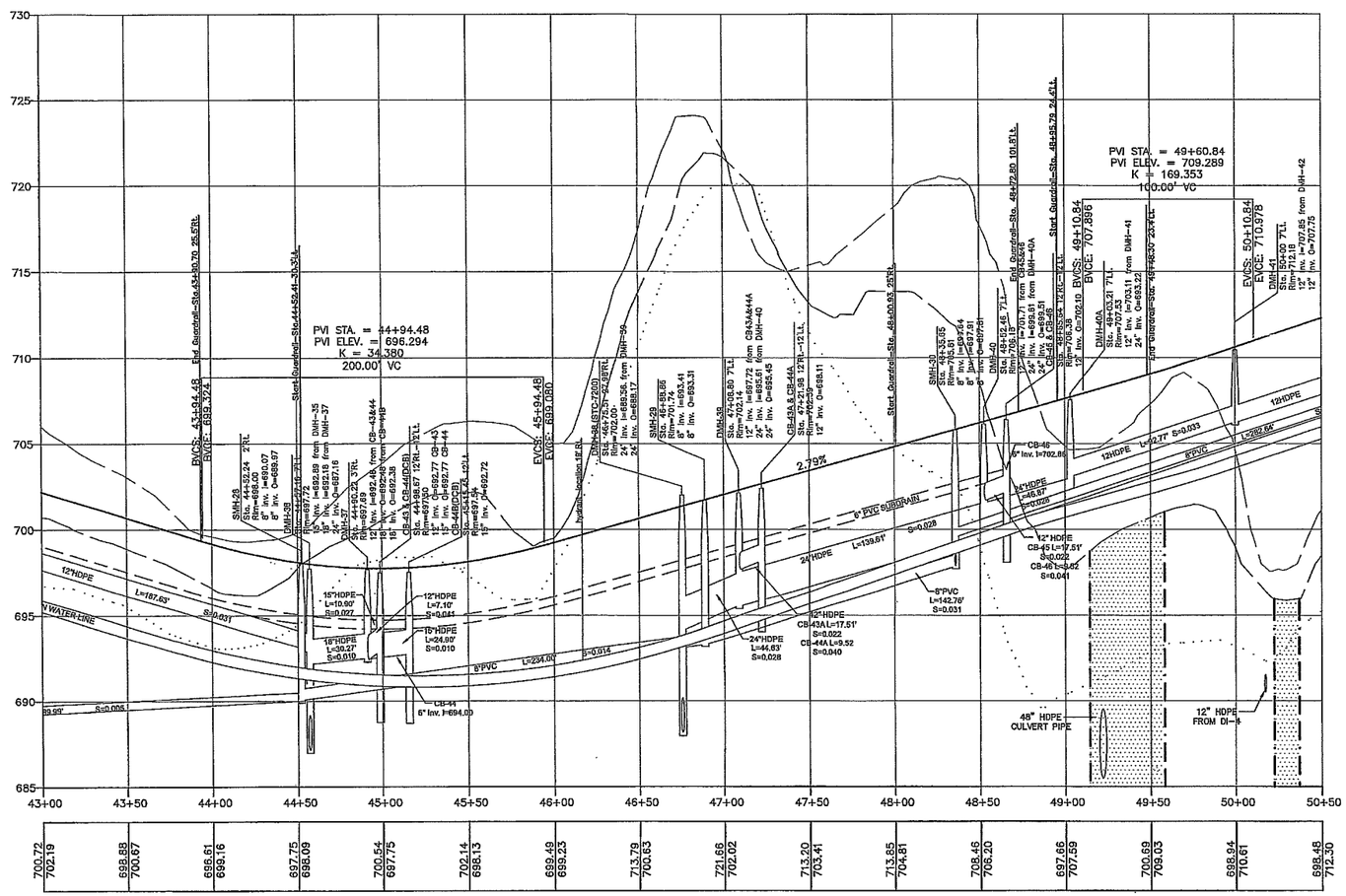
P-05

Sheet 5 of 15



PLAN VIEW - DEANNA DRIVE (STA. 43+00 - 50+50)

HORIZONTAL SCALE: 1"=40'



PROFILE VIEW

HORIZONTAL SCALE: 1"=40'
VERTICAL SCALE: 1"=4'

REVISIONS

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1	9/19/17	MULTIPLE REVISIONS	RMG
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CIVIL
No. 24532
REGISTERED PROFESSIONAL ENGINEER

James B. Kalloch - PE No.24532

LEGEND

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Existing lt
Existing rt
Proposed cl

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LOCATED ON
UNION STREET
HOLDEN, MASSACHUSETTS

SCALE: AS NOTED

OWNED BY & PREPARED FOR

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RUTLAND, MA. 01543

New England Environmental Design, LLC
Environmental Consultants ■ Civil Engineering Consultants
Land Surveying Consultants
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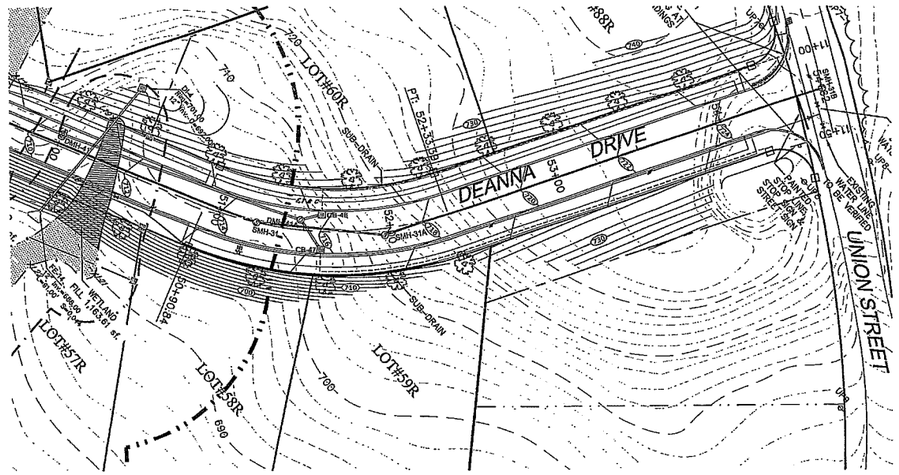
Date: September 07, 2015
Drawn By: RMG
Checked By: JBK
Job #: 907-13

P-06

Sheet 6 of 15


DEANNA DRIVE
UNION STREET
LOT#60R
LOT#57R
LOT#58R
LOT#59R
SUB-DRAIN
EXISTING WATER TO BE VERIFIED
WETLAND FILL 11,625.61 s.f.
EX. 50' WIDE DRAIN EASEMENT
700
710
720
730
740
750
760
770
780
790
800
810
820
830
840
850
860
870
880
890
900
910
920
930
940
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960
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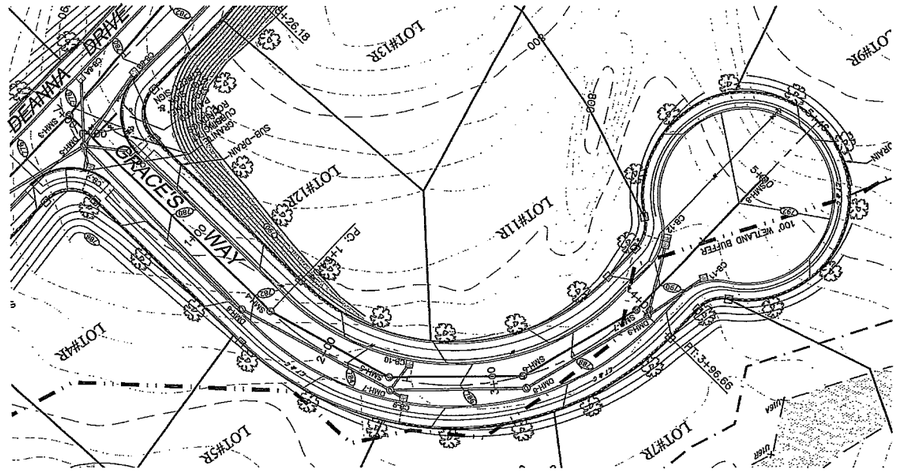
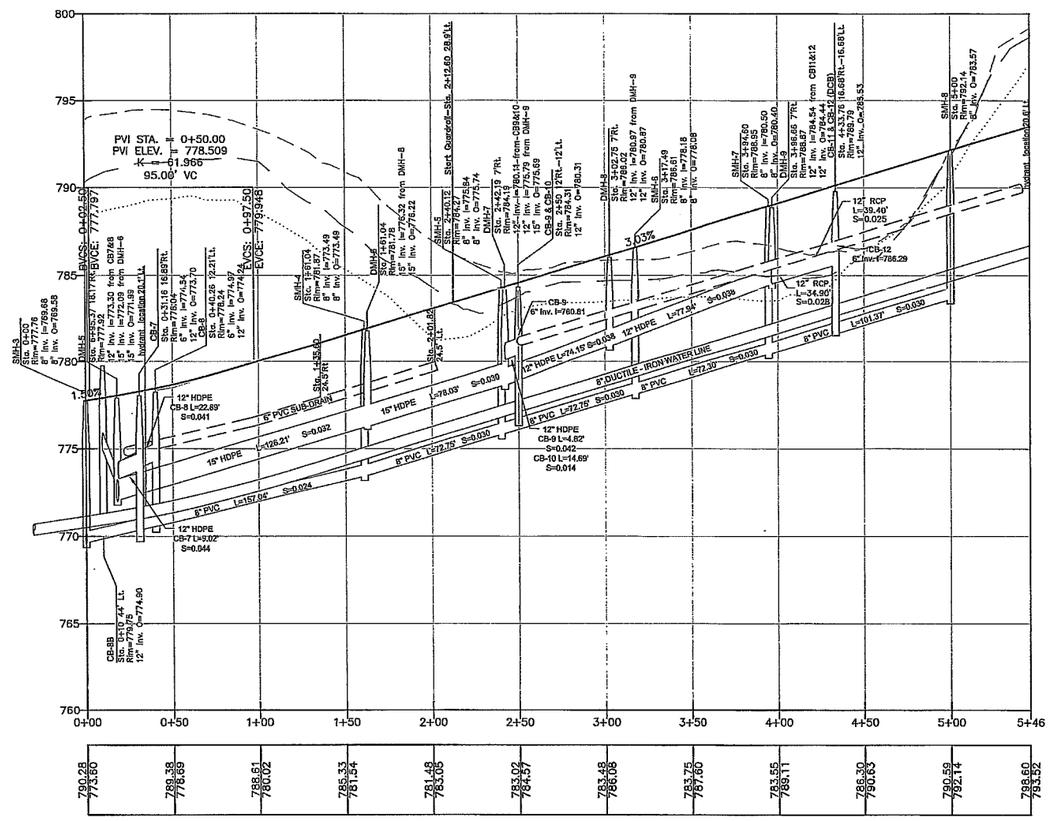


PLAN VIEW - GRACE'S WAY (STA. 0+00 - 5+46)

HORIZONTAL SCALE: 1"=40'



PROFILE VIEW

HORIZONTAL SCALE: 1"=40'
VERTICAL SCALE: 1"=4'

REVISIONS

REV	DATE	COMMENT	BY
1	9/07/17	MULTIPLE REVISIONS	RMG
2	9/19/17	MULTIPLE REVISIONS	RMG
3	10/13/17	MULTIPLE REVISIONS	RMG
4	11/06/17	MULTIPLE REVISIONS	RMG

COMMONWEALTH OF MASSACHUSETTS
JAMES B. KALLOCH
No. 24532
REGISTERED PROFESSIONAL ENGINEER

James B. Kalloch - PE No.24532

LEGEND

Existing cl
Existing lt
Existing rt
Proposed cl

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AMENDED DEFINITIVE PLAN GREENWOOD II

LOCATED ON
UNION STREET
HOLDEN, MASSACHUSETTS

SCALE: AS NOTED

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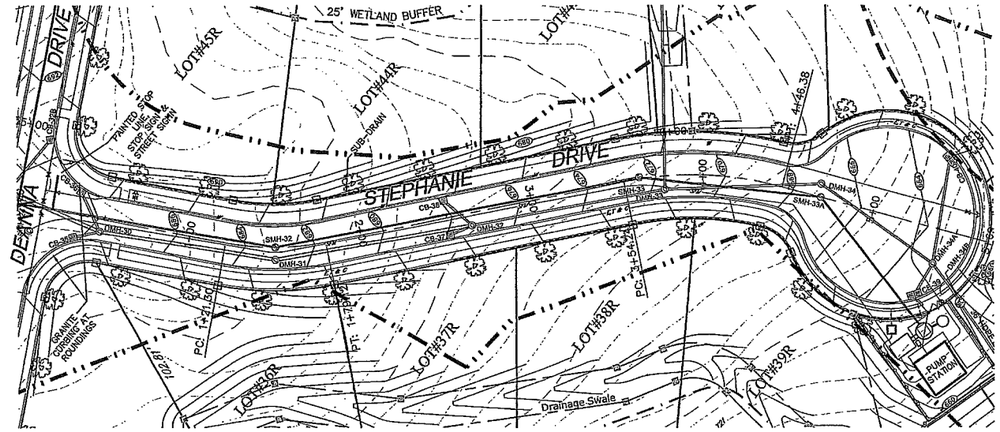
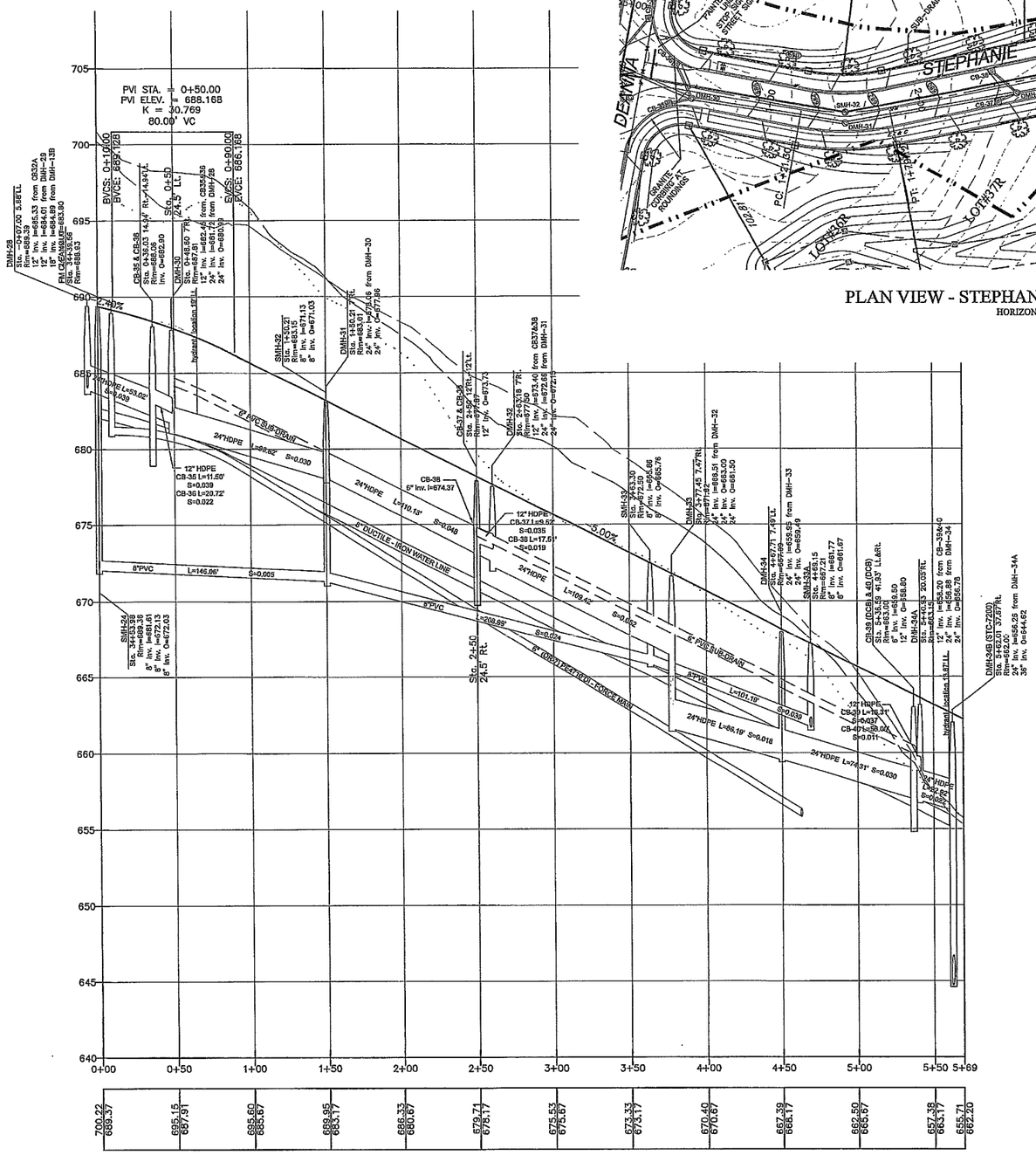
Date: September 07, 2015	P-08
Drawn By: RMG	
Checked By: JBK	
Job #: 907-13	Sheet 8 of 15



PLAN VIEW - STEPHANIE DRIVE (STA. 0+00 - 5+19)

HORIZONTAL SCALE: 1"=40'



PROFILE VIEW

HORIZONTAL SCALE: 1"=40'
VERTICAL SCALE: 1"=4'

REVISIONS

REV	DATE	COMMENT	BY
1	9/19/17	MULTIPLE REVISIONS	RMG
2	10/13/17	MULTIPLE REVISIONS	RMG
3	11/09/17	MULTIPLE REVISIONS	RMG
4	5/04/18	REVISIONS PER WESTON & SAMPSON	RMG

COMMONWEALTH OF MASSACHUSETTS
JAMES B. KALLOCH
CIVIL
No. 24532
REGISTERED
PROFESSIONAL ENGINEER

James B. Kalloch - PE No.24532

LEGEND

Existing cl
Existing lt
Existing rt
Proposed cl

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AMENDED DEFINITIVE PLAN GREENWOOD II

LOCATED ON
UNION STREET
HOLDEN, MASSACHUSETTS

SCALE: AS NOTED

OWNED BY & PREPARED FOR

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87 MAIN STREET
RUTLAND, MA. 01543

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P.O. Box 376 Rutland, MA 01543
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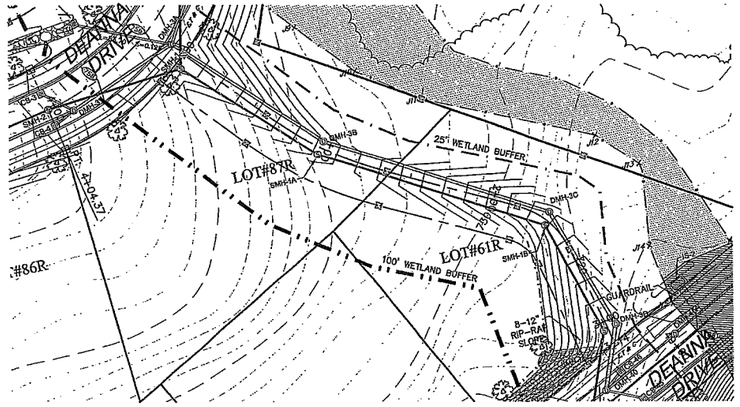
Job #: 907-13

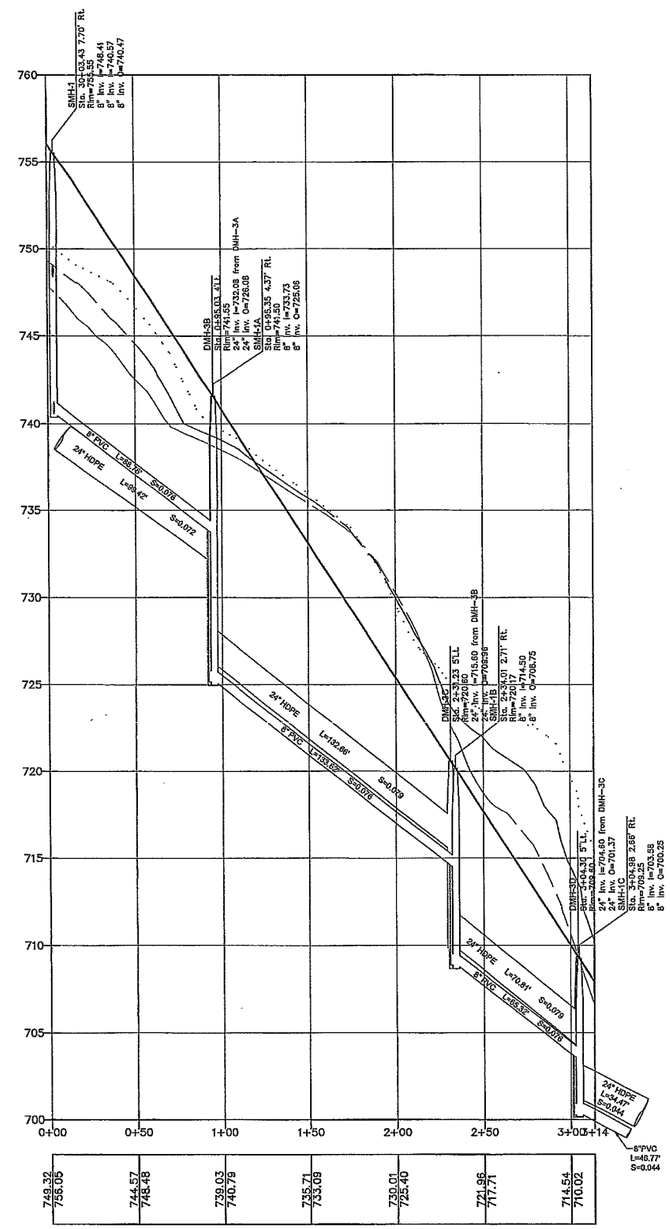
P-09

Sheet 9 of 15



CROSS COUNTRY UTILITY EASEMENT-1

HORIZONTAL SCALE: 1"=40'



PROFILE VIEW

HORIZONTAL SCALE: 1"=40'
VERTICAL SCALE: 1"=4'

REVISIONS

REV	DATE	COMMENT	BY
1	1/31/17	MULTIPLE REVISIONS	RMG
2	5/10/17	MULTIPLE REVISIONS	RMG
3	7/11/17	MULTIPLE REVISIONS	RMG
4	3/01/18	REVISE SEWER LOCATION	RMG

COMMONWEALTH OF MASSACHUSETTS
JAMES B. KALLOCH
CIVIL
No. 24532
REGISTERED PROFESSIONAL ENGINEER

James B. Kalloch - PE No.24532

LEGEND

Existing cl
Existing lt
Existing rt
Proposed cl

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AMENDED DEFINITIVE PLAN GREENWOOD II

LOCATED ON
UNION STREET
HOLDEN, MASSACHUSETTS

SCALE: AS NOTED

OWNED BY & PREPARED FOR

JACKSON WOODS INVESTMENTS, LLC.
87 MAIN STREET
RUTLAND, MA. 01543

New England Environmental Design, LLC
Environmental Consultants ■ Civil Engineering Consultants
Land Surveying Consultants
P.O. Box 376 Rutland, MA 01543
(508) 829-7222 Ph (508) 829-7522 Fax

Date: September 07, 2015
Drawn By: RMG
Checked By: JBK
Job #: 907-13

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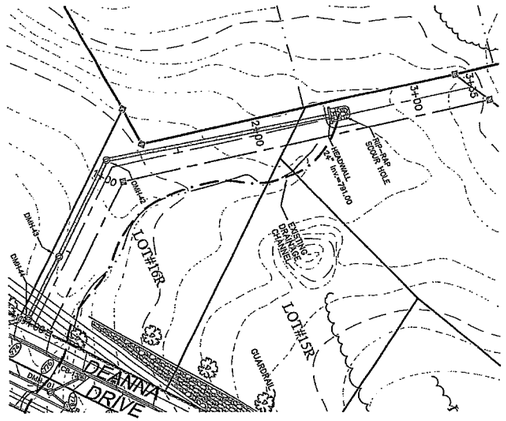
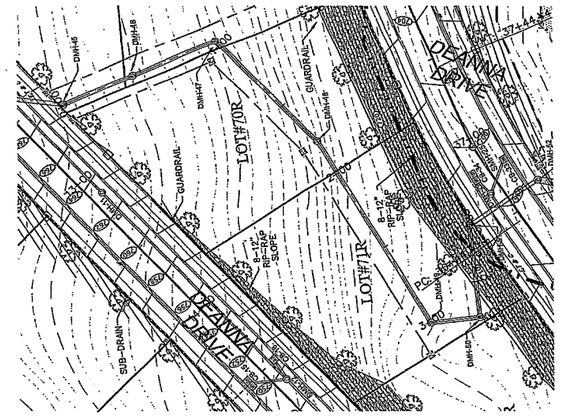


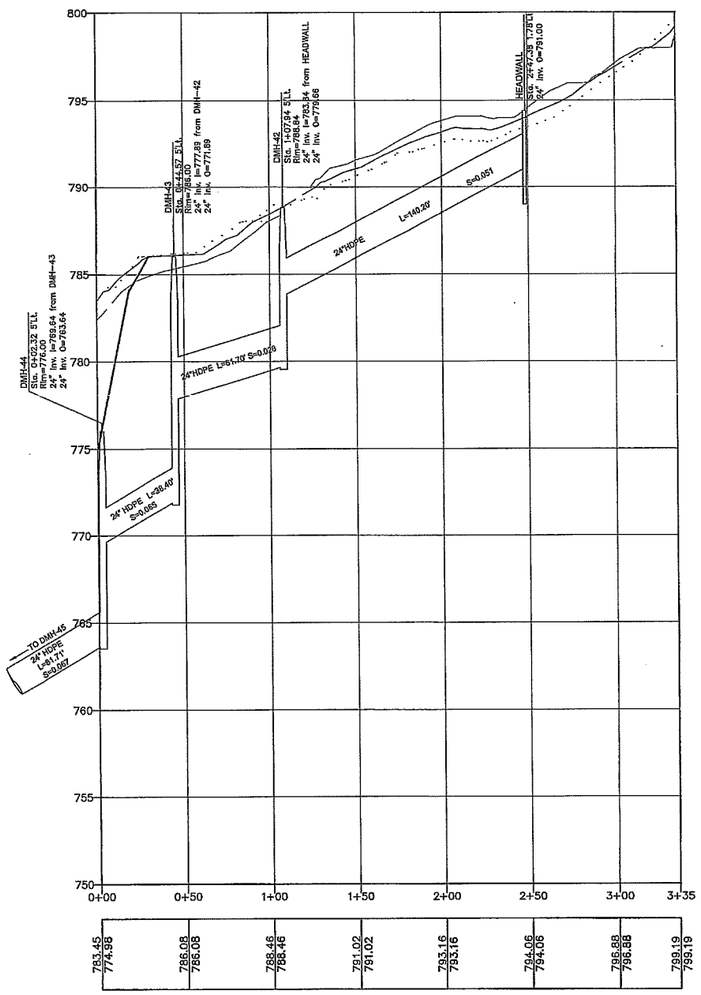
CROSS COUNTRY UTILITY EASEMENT-2

HORIZONTAL SCALE: 1"=40'



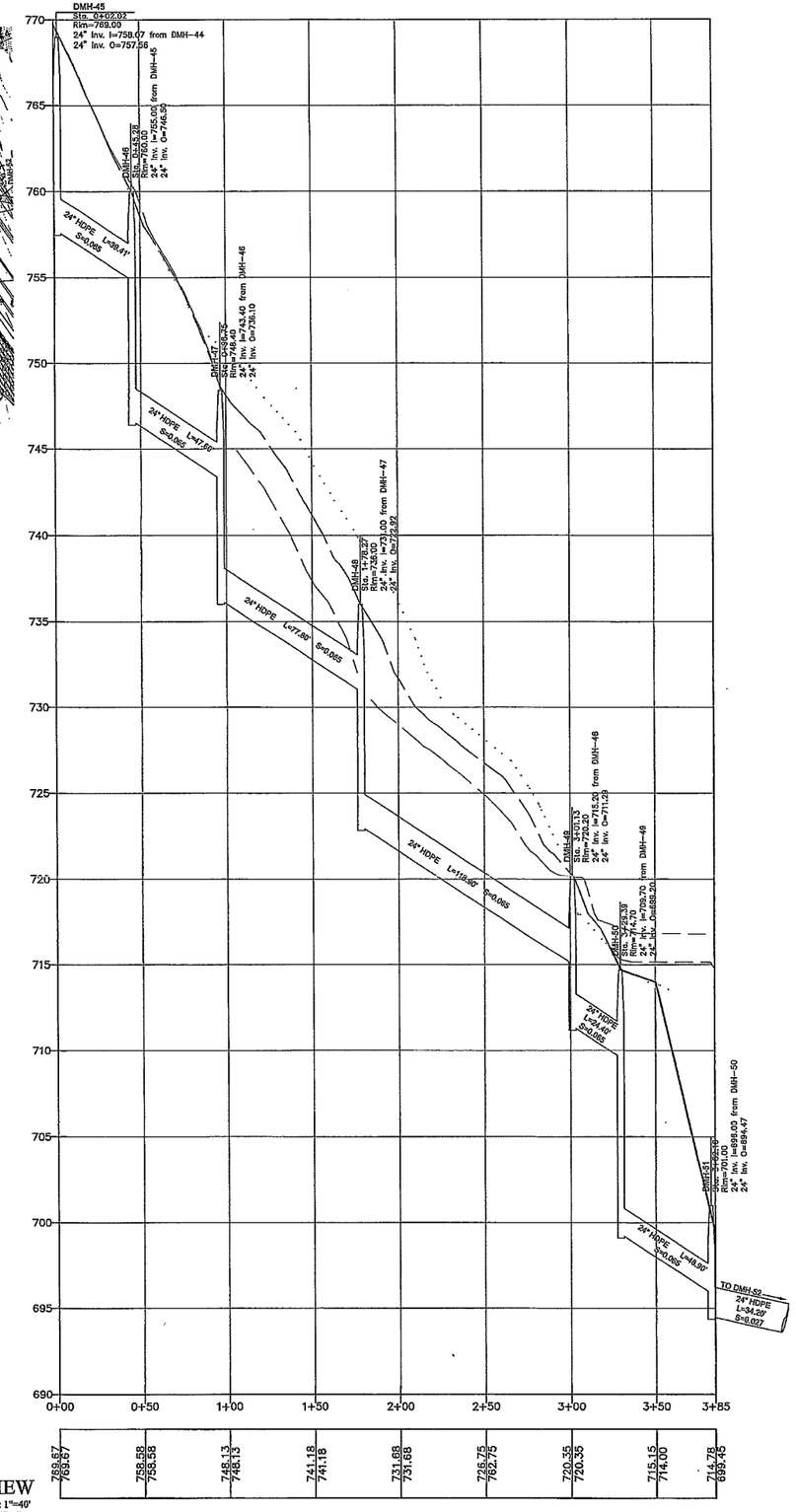
CROSS COUNTRY UTILITY EASEMENT-3

HORIZONTAL SCALE: 1"=40'



PROFILE VIEW

HORIZONTAL SCALE: 1"=40'
VERTICAL SCALE: 1"=4'



PROFILE VIEW

HORIZONTAL SCALE: 1"=40'
VERTICAL SCALE: 1"=4'

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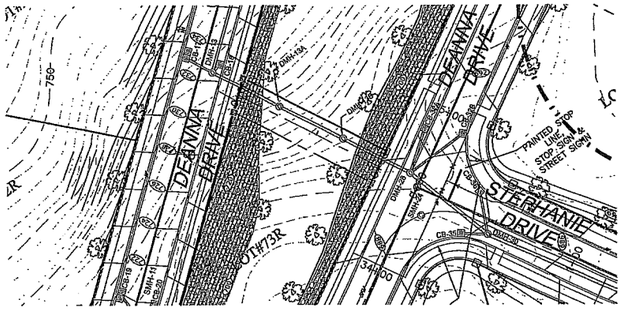
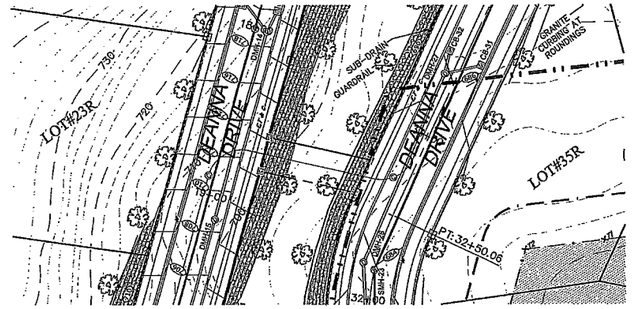
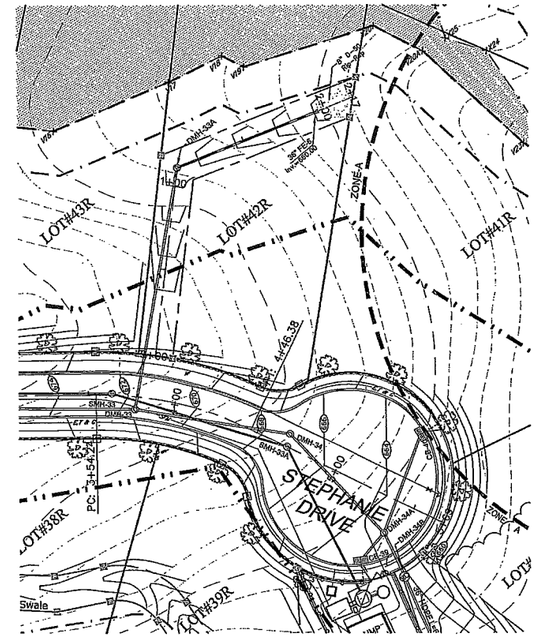


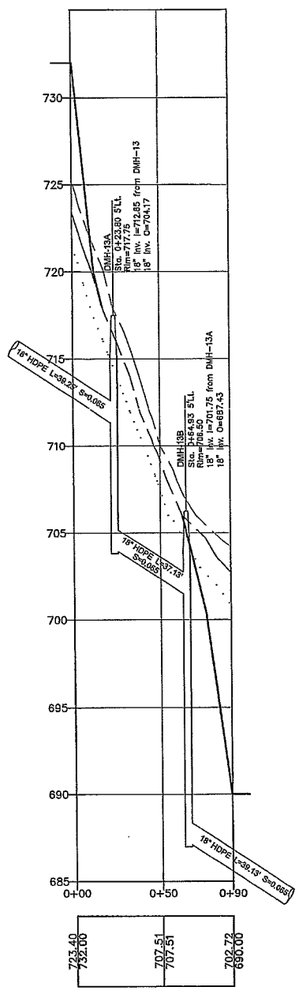
CROSS COUNTRY DRAINAGE EASEMENT-4
HORIZONTAL SCALE: 1"=40'



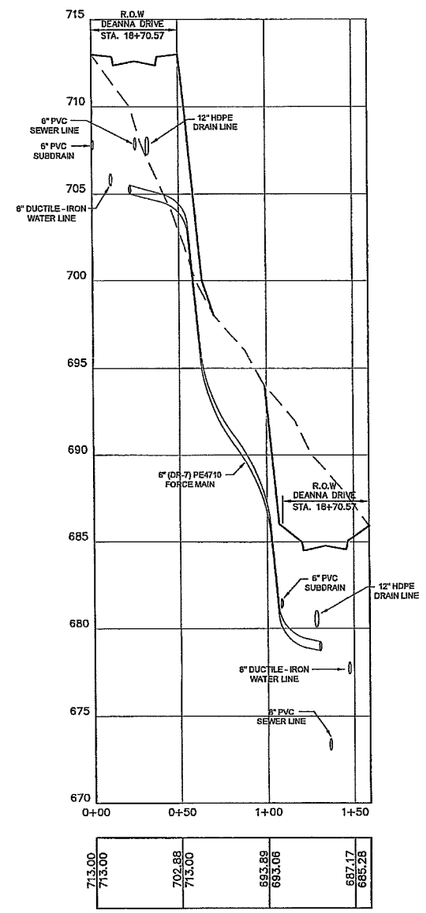
UTILITY EASEMENT LOT #74R
HORIZONTAL SCALE: 1"=40'



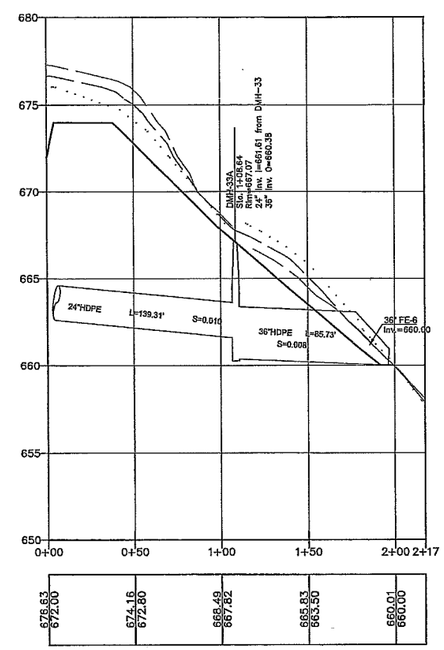
CROSS COUNTRY UTILITY EASEMENT-5
HORIZONTAL SCALE: 1"=40'



PROFILE VIEW
HORIZONTAL SCALE: 1"=40'
VERTICAL SCALE: 1"=4'



PROFILE VIEW
HORIZONTAL SCALE: 1"=40'
VERTICAL SCALE: 1"=4'



PROFILE VIEW
HORIZONTAL SCALE: 1"=40'
VERTICAL SCALE: 1"=4'

REVISIONS

REV	DATE	COMMENT	BY
1	9/19/17	MULTIPLE REVISIONS	RMG
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3	3/01/18	REVISE SEWER LOCATION	RMG
4	5/04/18	REVISIONS PER WESTON & SAMPSON	RMG

COMMONWEALTH OF MASSACHUSETTS
JAMES B. KALLOCH
CIVIL
No. 24532
REGISTERED PROFESSIONAL ENGINEER

James B. Kalloch - PE No.24532

LEGEND

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Existing lt
Existing rt
Proposed cl

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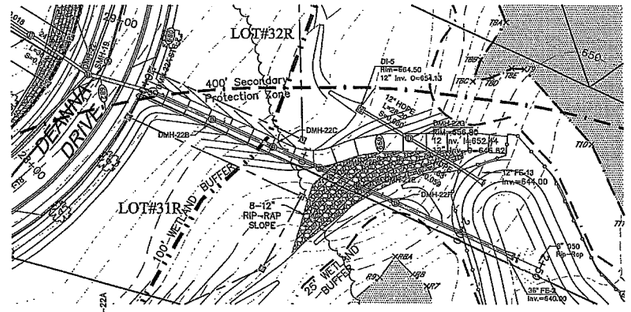
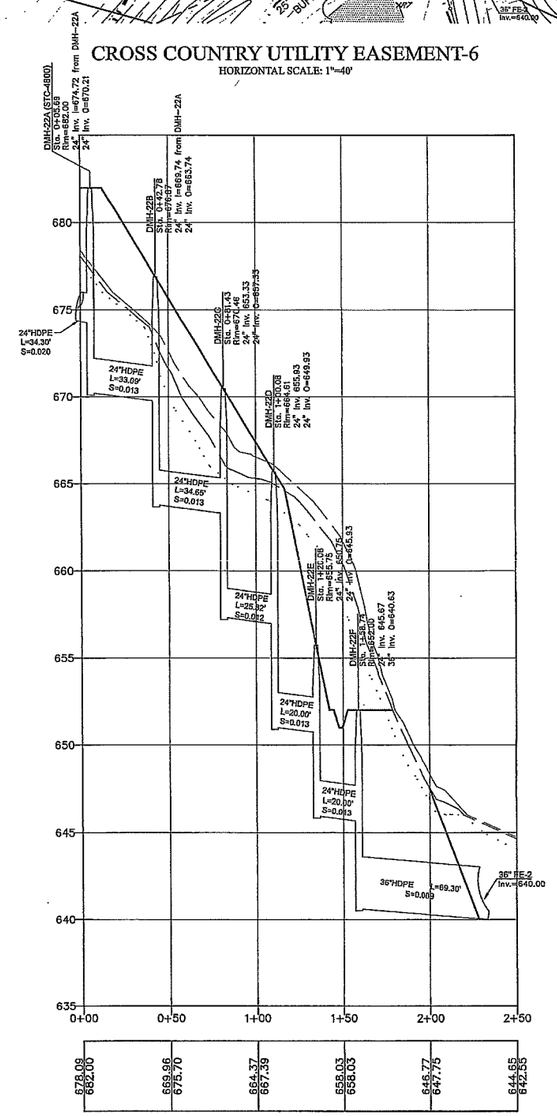


CROSS COUNTRY UTILITY EASEMENT-6

HORIZONTAL SCALE: 1"=40'



PROFILE VIEW

HORIZONTAL SCALE: 1"=40'
VERTICAL SCALE: 1"=4'

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REV	DATE	COMMENT	BY
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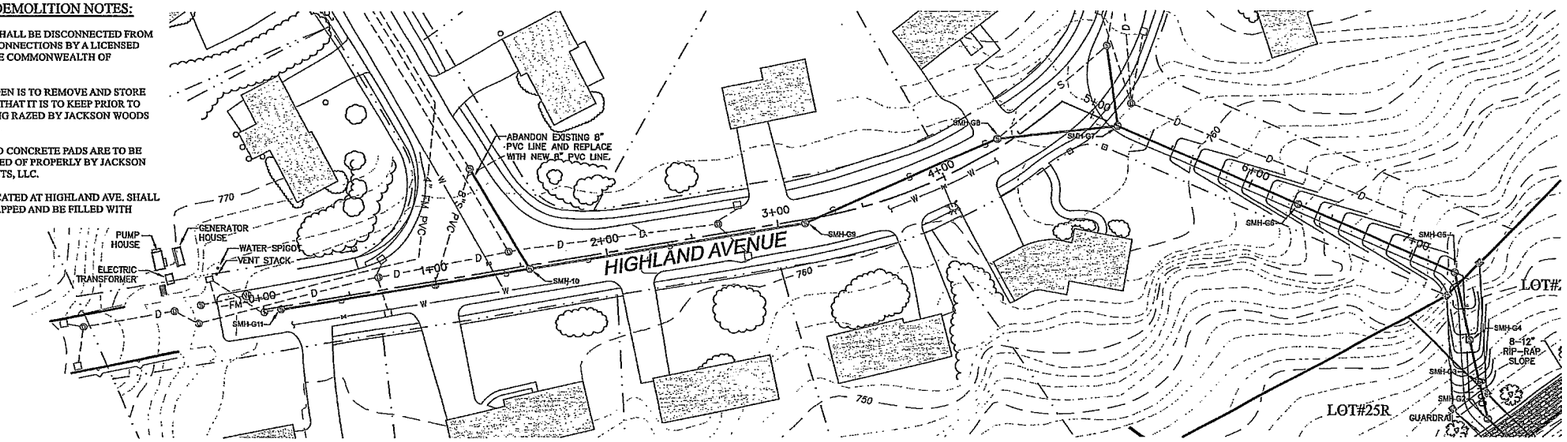
Sheet 13 of 15

PUMP STATION DEMOLITION NOTES:

1. ALL COMPONENTS SHALL BE DISCONNECTED FROM ANY ELECTRICAL CONNECTIONS BY A LICENSED ELECTRICIAN IN THE COMMONWEALTH OF MASSACHUSETTS.
2. THE TOWN OF HOLDEN IS TO REMOVE AND STORE ANY COMPONENTS THAT IT IS TO KEEP PRIOR TO PUMP STATION BEING RAZED BY JACKSON WOODS INVESTMENTS, LLC.
3. THE BUILDINGS AND CONCRETE PADS ARE TO BE RAZED AND DISPOSED OF PROPERLY BY JACKSON WOODS INVESTMENTS, LLC.
4. THE WET WELL LOCATED AT HIGHLAND AVE. SHALL HAVE THE PIPES CAPPED AND BE FILLED WITH SUITABLE FILL.

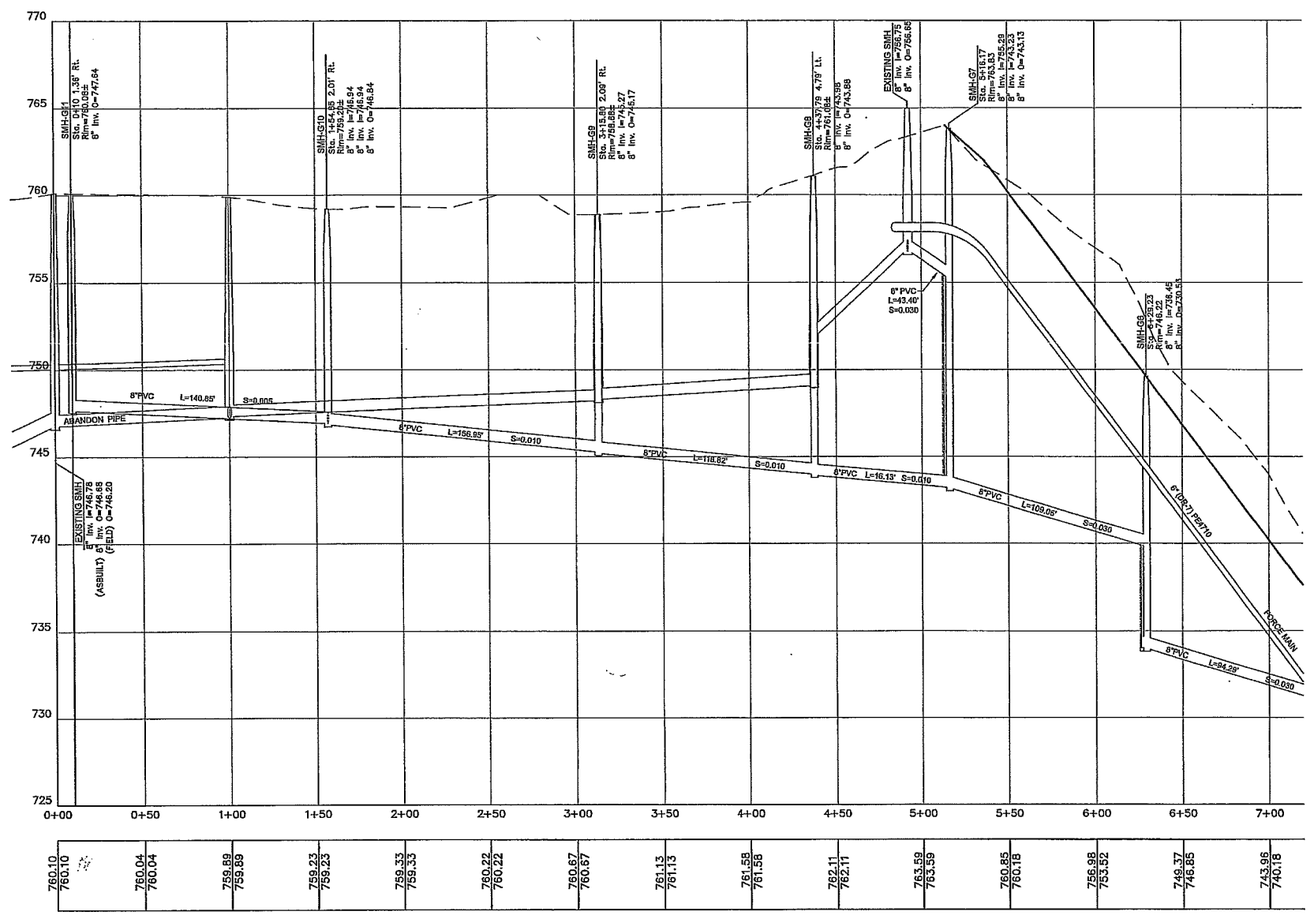


CROSS COUNTRY UTILITY EASEMENT-7

HORIZONTAL SCALE: 1"=40'

NOTES:

1. INSTALL MANHOLES IN ORDER FROM G-1 TO G-11. AS PIPES BETWEEN MANHOLES ARE COMPLETED RECONNECT SEVICE CONNECTIONS PRIOR TO INSTALLING THE NEXT PIPE RUN TO MINIMIZE THE INTERRUPTION OF SERVICE.
2. ALL SEWER SERVICES SHALL BE TIED INTO THE NEW MAIN WITH A SEWER CHIMNEY AND CONNECTION TO THE EXISTING SERVICE SHOULD BE MADE USING A SOLID SLEEVE COUPLING.
3. A PUSH CAMERA INSPECTION SHALL BE MADE OF EACH EXISTING SEWER SERVICE CONNECTION PRIOR TO THE FINAL CONNECTION WITH THE NEW MAIN.



PROFILE VIEW

HORIZONTAL SCALE: 1"=40'
VERTICAL SCALE: 1"=4'

REVISIONS

REV	DATE	COMMENT	BY
1	7/11/17	MULTIPLE REVISIONS	RMG
2	3/01/18	REVISE SEWER LOCATION	RMG
3	5/04/18	REVISIONS PER WESTON & SAMPSON	RMG
4	6/01/18	REVISIONS PER WESTON & SAMPSON	RMG

COMMONWEALTH OF MASSACHUSETTS
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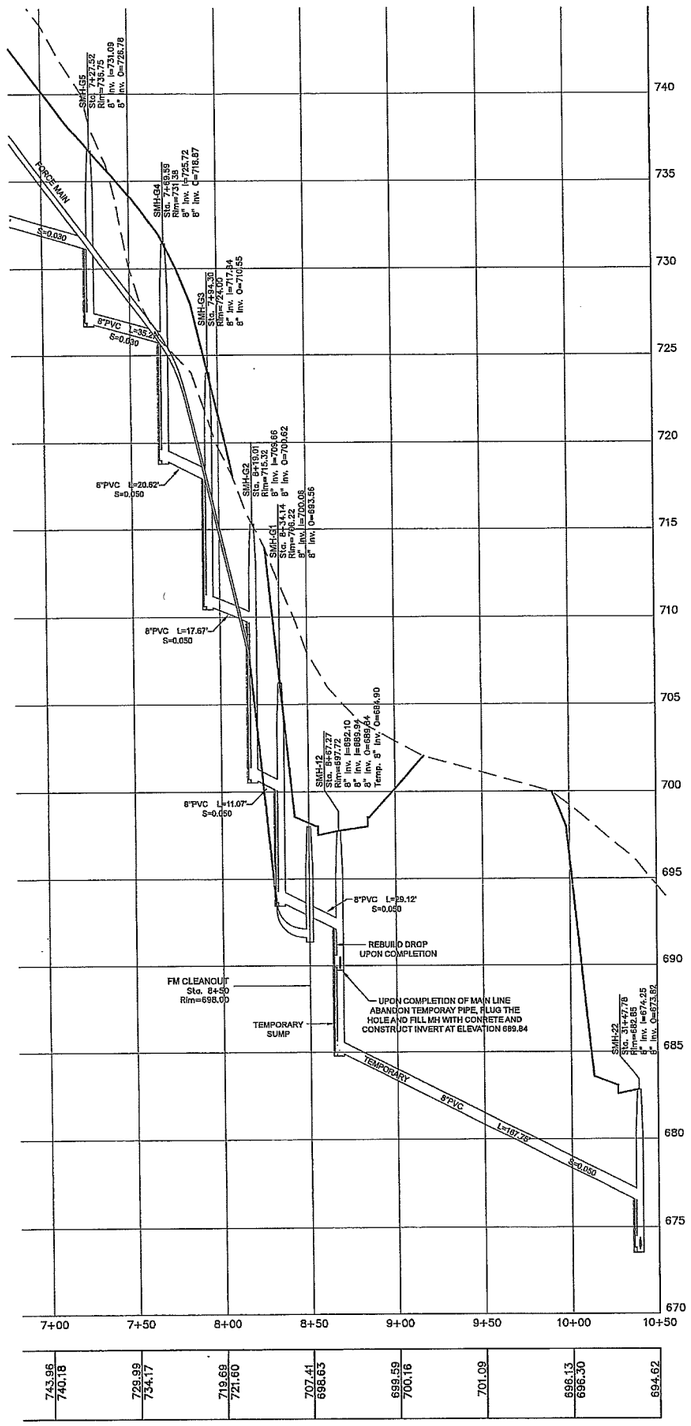
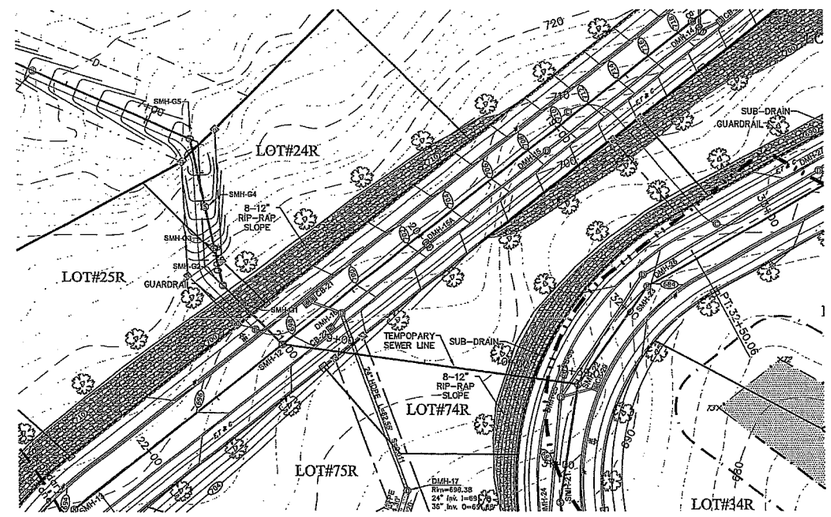
Sheet 14 of 15



PROFILE VIEW
HORIZONTAL SCALE: 1"=40'
VERTICAL SCALE: 1"=4'



CROSS COUNTRY UTILITY EASEMENT-7
HORIZONTAL SCALE: 1"=40'

REVISIONS

REV	DATE	COMMENT	BY
1	5/10/17	MULTIPLE REVISIONS	RMG
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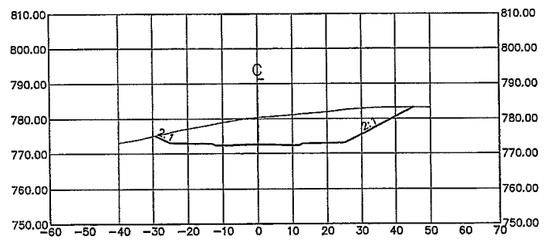
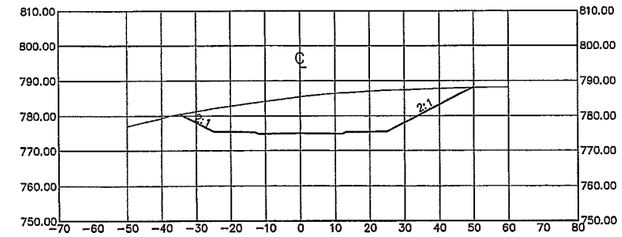
Sheet 15 of 15

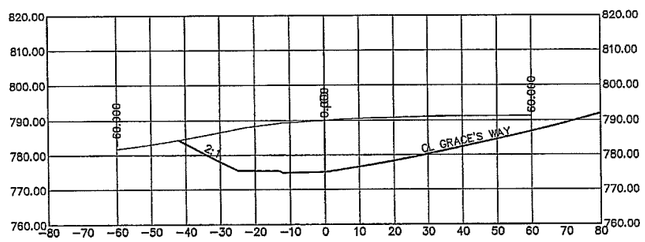
DEANNA DRIVE



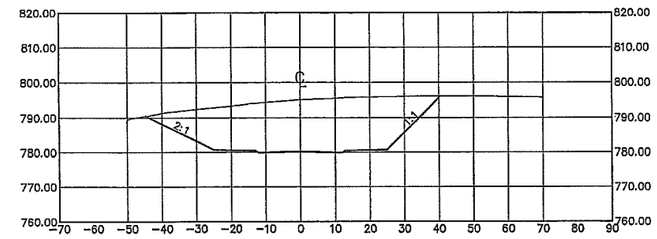
CROSS SECTION
DEANNA DRIVE (STA. 6+00)
SCALE: 1"=20'



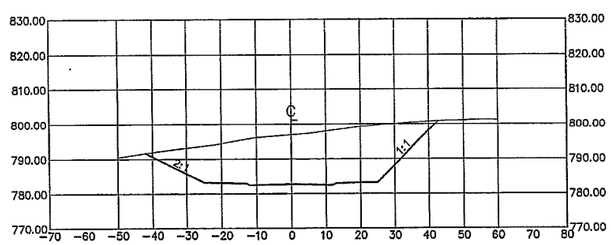
CROSS SECTION
DEANNA DRIVE (STA. 6+50)
SCALE: 1"=20'



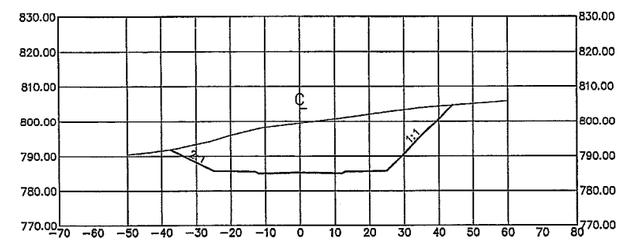
CROSS SECTION
DEANNA DRIVE (STA. 7+00)
SCALE: 1"=20'



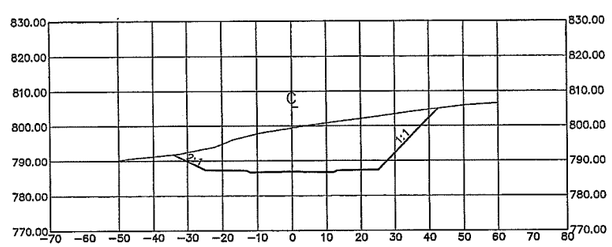
CROSS SECTION
DEANNA DRIVE (STA. 7+50)
SCALE: 1"=20'



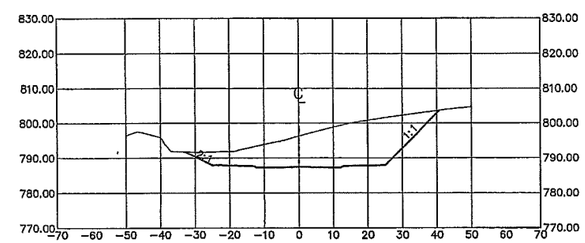
CROSS SECTION
DEANNA DRIVE (STA. 8+00)
SCALE: 1"=20'



CROSS SECTION
DEANNA DRIVE (STA. 8+50)
SCALE: 1"=20'



CROSS SECTION
DEANNA DRIVE (STA. 9+00)
SCALE: 1"=20'



CROSS SECTION
DEANNA DRIVE (STA. 9+50)
SCALE: 1"=20'

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COMMONWEALTH OF MASSACHUSETTS
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And no notice of appeal there from received by the Holden Town Clerk during the 20 days following.

_____

Town Clerk Date

AMENDED DEFINITIVE PLAN GREENWOOD II

LOCATED ON
UNION STREET
HOLDEN, MASSACHUSETTS

SCALE: AS NOTED

OWNED BY & PREPARED FOR

JACKSON WOODS INVESTMENTS, LLC.
87 MAIN STREET
RUTLAND, MA. 01543

New England Environmental Design, LLC

Environmental Consultants ■ Civil Engineering Consultants
Land Surveying Consultants
P.O. Box 376 Rutland, MA 01543
(508) 829-7222 Ph (508) 829-7522 Fax

Date: September 07, 2015

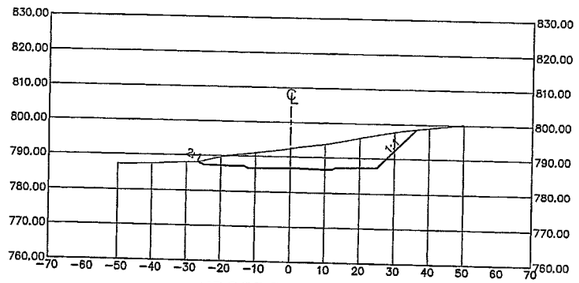
Drawn By: RMG

Checked By: JBK

Job #: 907-13

X-01

Sheet 1 of 13



CROSS SECTION
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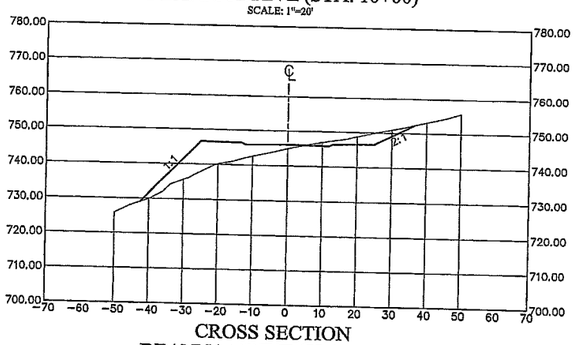
SCALE: 1"=20'



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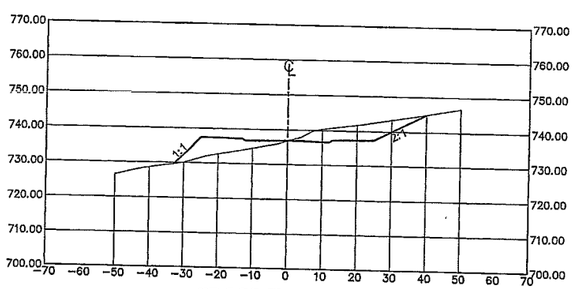

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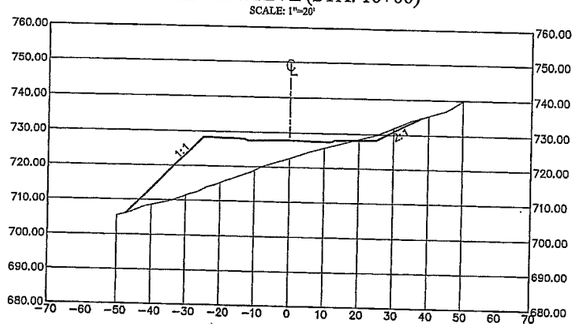
SCALE: 1"=20'



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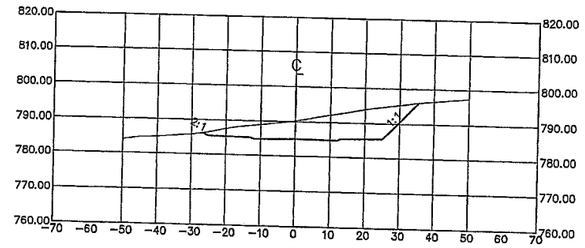

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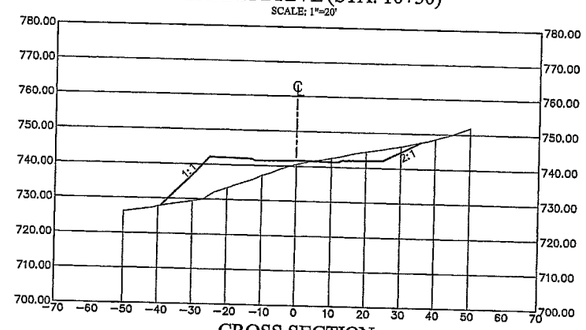

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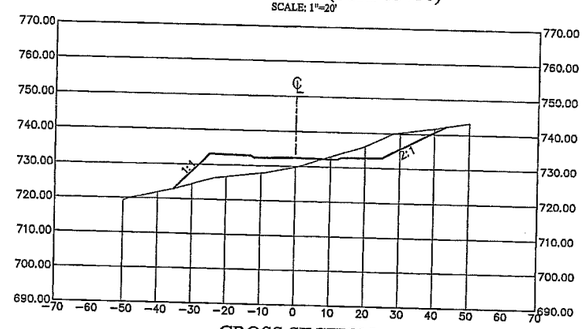
SCALE: 1"=20'



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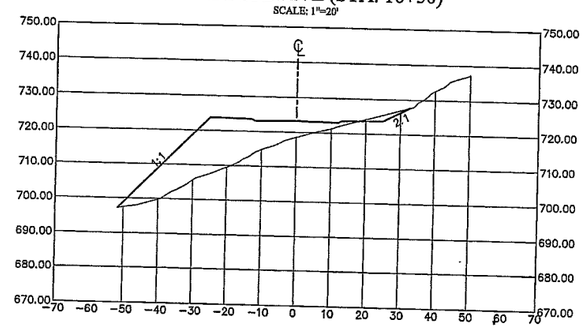
DEANNA DRIVE (STA. 16+50)
SCALE: 1"=20'



CROSS SECTION
DEANNA DRIVE (STA. 17+50)
SCALE: 1"=20'

REVISIONS

REV	DATE	COMMENT	BY
1	9/28/16	MULTIPLE REVISIONS	RMG
2	12/19/16	MULTIPLE REVISIONS	RMG
3	1/31/17	MULTIPLE REVISIONS	RMG
4	5/16/17	MULTIPLE REVISIONS	RMG

COMMONWEALTH OF MASSACHUSETTS
JAMES B. KALLOCH
No. 24532
REGISTERED PROFESSIONAL ENGINEER

James B. Kalloch - PE No.24532

LEGEND

Existing Grade _____

Proposed Grade _____

THIS ENDORSEMENT MAKES NO DETERMINATION AS TO ZONING COMPLIANCE OR PLAN ACCURACY.

APPROVAL UNDER THE SUBDIVISION CONTROL LAW IS REQUIRED.

HOLDEN PLANNING BOARD:

_____

_____

_____

_____

_____

Date: _____

Certificate of No Appeal

Decision of the Town of Holden Planning Board approving this plan was recorded in the office of the Holden Town Clerk on

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Town Clerk Date

AMENDED DEFINITIVE PLAN GREENWOOD II

LOCATED ON
UNION STREET
HOLDEN, MASSACHUSETTS

SCALE: AS NOTED

OWNED BY & PREPARED FOR

JACKSON WOODS INVESTMENTS, LLC.
87 MAIN STREET
RUTLAND, MA. 01543

New England Environmental Design, LLC

Environmental Consultants ■ Civil Engineering Consultants
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P.O. Box 376 Rutland, MA 01543
(508) 829-7222 Ph (508) 829-7522 Fax

Date: September 07, 2015

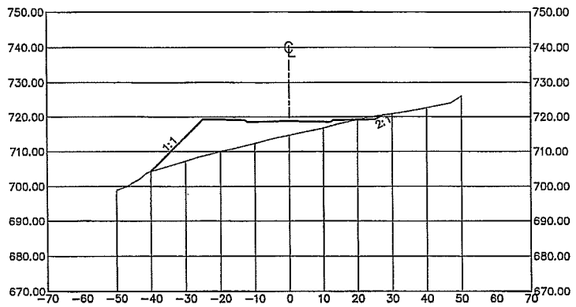
Drawn By: RMG

Checked By: JBK

Job #: 907-13

X-02

Sheet 2 of 13



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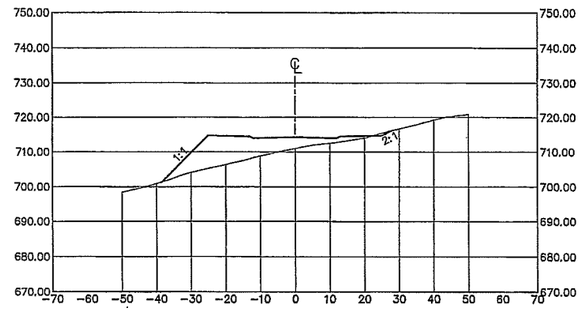

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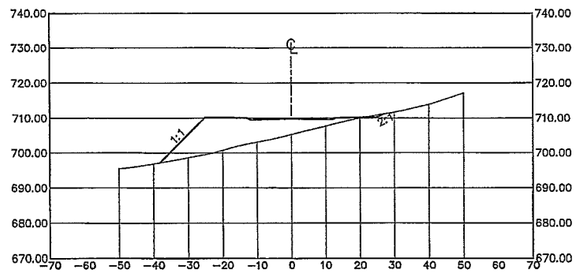
DEANNA DRIVE (STA. 18+50)
SCALE: 1"=20'



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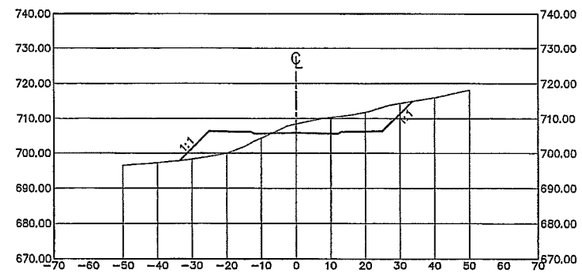
SCALE: 1"=20'



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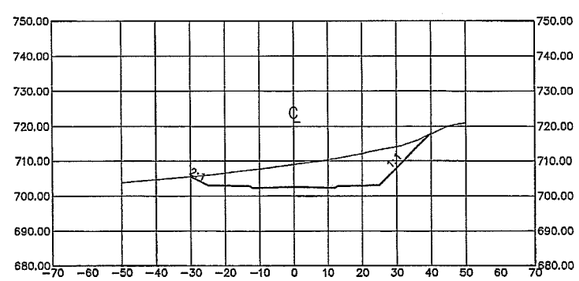

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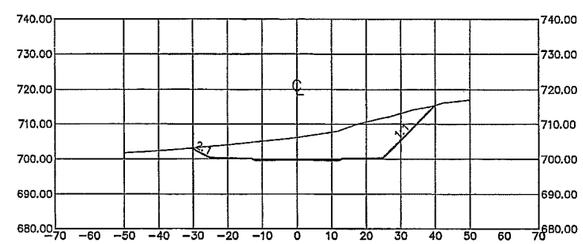
SCALE: 1"=20'



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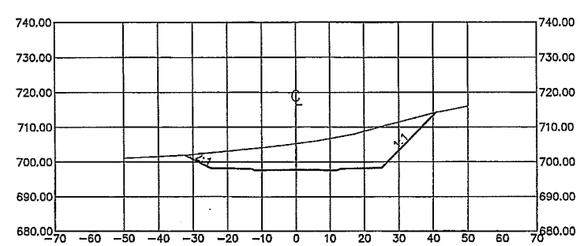
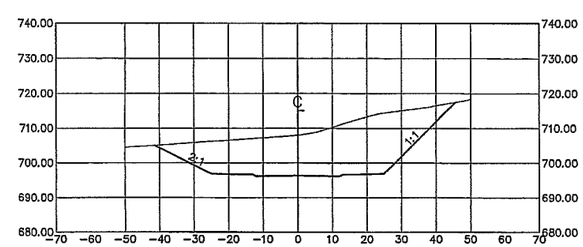
SCALE: 1"=20'



CROSS SECTION
DEANNA DRIVE (STA. 21+00)
SCALE: 1"=20'



CROSS SECTION
DEANNA DRIVE (STA. 21+50)
SCALE: 1"=20'

REVISIONS

REV	DATE	COMMENT	BY
1	8/28/16	MULTIPLE REVISIONS	RMG
2	12/19/16	MULTIPLE REVISIONS	RMG
3	1/31/17	MULTIPLE REVISIONS	RMG
4	6/10/17	MULTIPLE REVISIONS	RMG

COMMONWEALTH OF MASSACHUSETTS
JAMES B. KALLOCH
No. 24532
REGISTERED PROFESSIONAL ENGINEER

James B. Kalloch - PE No.24532

LEGEND

Existing Grade _____

Proposed Grade _____

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APPROVAL UNDER THE SUBDIVISION CONTROL LAW IS REQUIRED.

HOLDEN PLANNING BOARD:

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Date: _____

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Town Clerk Date

AMENDED DEFINITIVE PLAN GREENWOOD II

LOCATED ON
UNION STREET
HOLDEN, MASSACHUSETTS

SCALE: AS NOTED

OWNED BY & PREPARED FOR

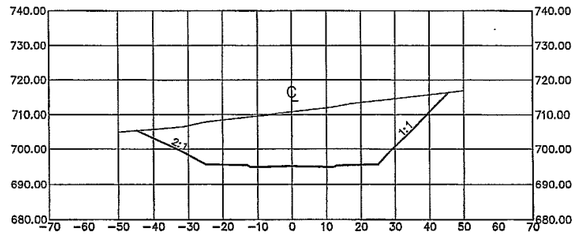
JACKSON WOODS INVESTMENTS, LLC.
87 MAIN STREET
RUTLAND, MA. 01543

New England Environmental Design, LLC

Environmental Consultants ■ Civil Engineering Consultants
Land Surveying Consultants
P.O. Box 376 Rutland, MA 01543
(508) 829-7222 Ph (508) 829-7522 Fax

Date: September 07, 2015
Drawn By: RMG
Checked By: JBK
Job #: 907-13

X-03



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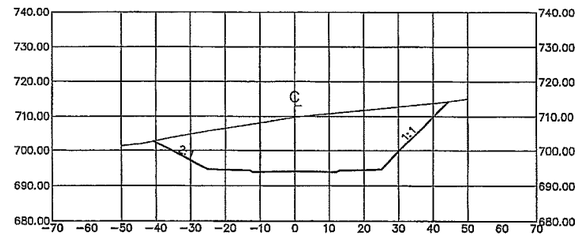
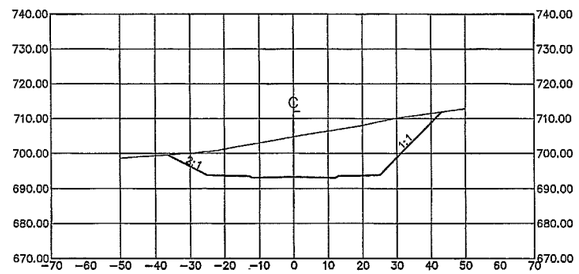
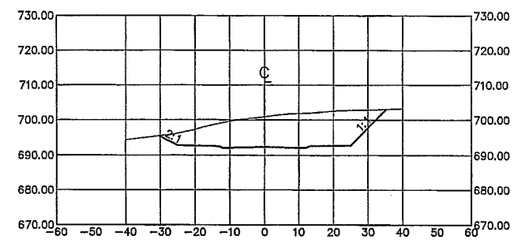
DEANNA DRIVE (STA. 22+00)
SCALE: 1"=20'



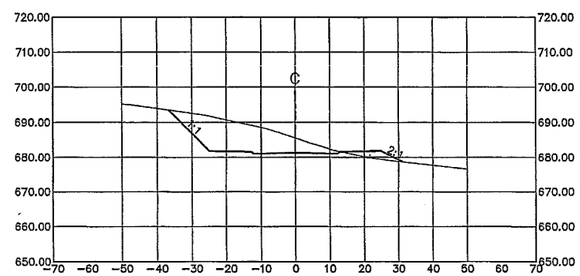
CROSS SECTION
DEANNA DRIVE (STA. 22+50)
SCALE: 1"=20'



CROSS SECTION
DEANNA DRIVE (STA. 23+00)
SCALE: 1"=20'



CROSS SECTION
DEANNA DRIVE (STA. 23+50)
SCALE: 1"=20'



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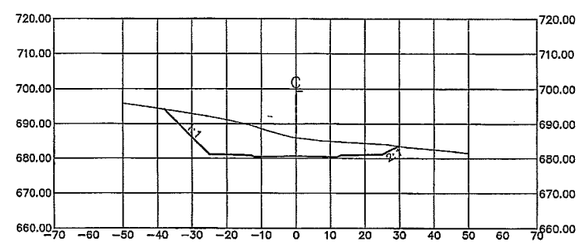
DEANNA DRIVE (STA. 29+00)
SCALE: 1"=20'



CROSS SECTION
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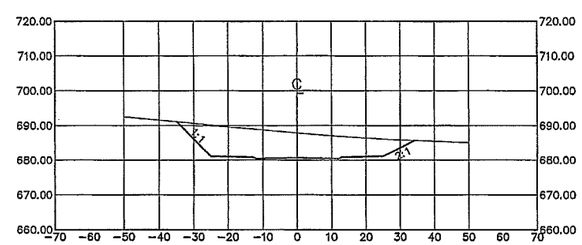
SCALE: 1"=20'



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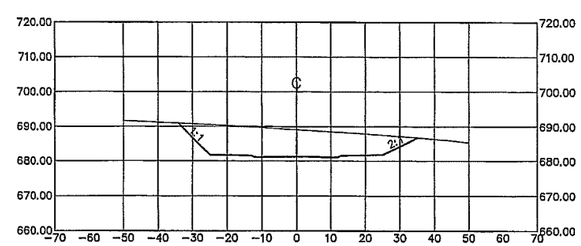
SCALE: 1"=20'



CROSS SECTION
DEANNA DRIVE (STA. 30+50)
SCALE: 1"=20'

REVISIONS

REV	DATE	COMMENT	BY
1	9/28/16	MULTIPLE REVISIONS	RMG
2	12/19/16	MULTIPLE REVISIONS	RMG
3	1/31/17	MULTIPLE REVISIONS	RMG
4	5/10/17	MULTIPLE REVISIONS	RMG

COMMONWEALTH OF MASSACHUSETTS
JAMES B. KALLOCH
No. 24532
REGISTERED PROFESSIONAL ENGINEER

James B. Kalloch - PE No.24532

LEGEND

Existing Grade _____

Proposed Grade _____

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APPROVAL UNDER THE SUBDIVISION CONTROL LAW IS REQUIRED.

HOLDEN PLANNING BOARD:

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Date: _____

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Town Clerk Date

AMENDED DEFINITIVE PLAN GREENWOOD II

LOCATED ON
UNION STREET
HOLDEN, MASSACHUSETTS

SCALE: AS NOTED

OWNED BY & PREPARED FOR

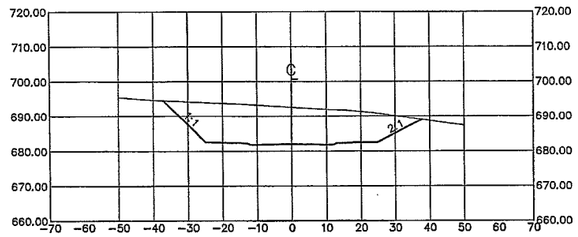
JACKSON WOODS INVESTMENTS, LLC.
87 MAIN STREET
RUTLAND, MA. 01543

New England Environmental Design, LLC
Environmental Consultants ■ Civil Engineering Consultants
Land Surveying Consultants
P.O. Box 376 Rutland, MA 01543
(508) 829-7222 Ph (508) 829-7522 Fax

Date: September 07, 2015
Drawn By: RMG
Checked By: JBK
Job #: 907-13

X-04

Sheet 4 of 13



CROSS SECTION
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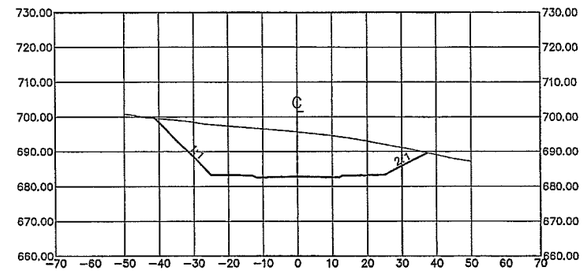
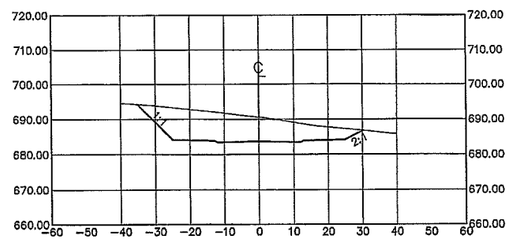
SCALE: 1"=20'



CROSS SECTION
DEANNA DRIVE (STA. 31+50)
SCALE: 1"=20'



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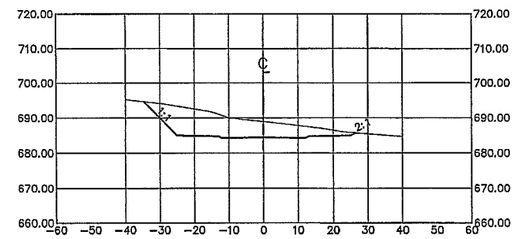
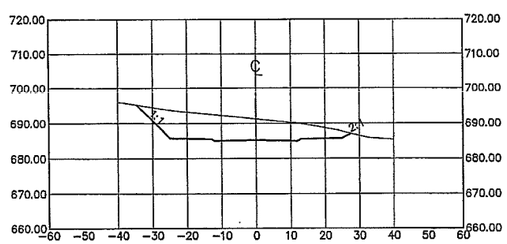
DEANNA DRIVE (STA. 32+00)
SCALE: 1"=20'



CROSS SECTION
DEANNA DRIVE (STA. 32+50)
SCALE: 1"=20'



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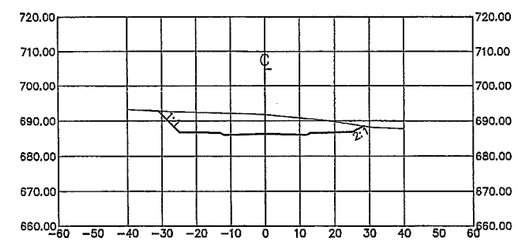
DEANNA DRIVE (STA. 33+00)
SCALE: 1"=20'



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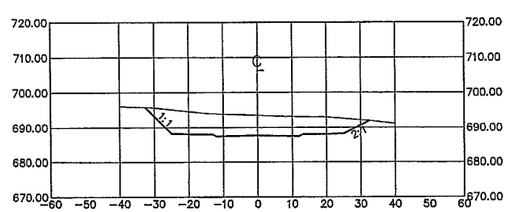
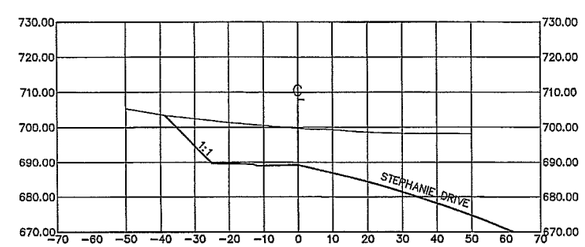
DEANNA DRIVE (STA. 33+50)
SCALE: 1"=20'



CROSS SECTION
DEANNA DRIVE (STA. 34+00)
SCALE: 1"=20'



CROSS SECTION
DEANNA DRIVE (STA. 34+50)
SCALE: 1"=20'

REVISIONS

REV	DATE	COMMENT	BY
1	9/20/16	MULTIPLE REVISIONS	RMG
2	12/19/16	MULTIPLE REVISIONS	RMG
3	1/31/17	MULTIPLE REVISIONS	RMG
4	5/10/17	MULTIPLE REVISIONS	RMG

COMMONWEALTH OF MASSACHUSETTS
JAMES B. KALLOCH
No. 24532
REGISTERED PROFESSIONAL ENGINEER

James B. Kalloch - PE No.24532

LEGEND

Existing Grade _____
Proposed Grade _____

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APPROVAL UNDER THE SUBDIVISION CONTROL LAW IS REQUIRED.

HOLDEN PLANNING BOARD:

_____
_____
_____
_____
_____

Date: _____

Certificate of No Appeal
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AMENDED DEFINITIVE PLAN GREENWOOD II

LOCATED ON
UNION STREET
HOLDEN, MASSACHUSETTS

SCALE: AS NOTED

OWNED BY & PREPARED FOR

JACKSON WOODS INVESTMENTS, LLC.
87 MAIN STREET
RUTLAND, MA. 01543

New England Environmental Design, LLC
Environmental Consultants ■ Civil Engineering Consultants
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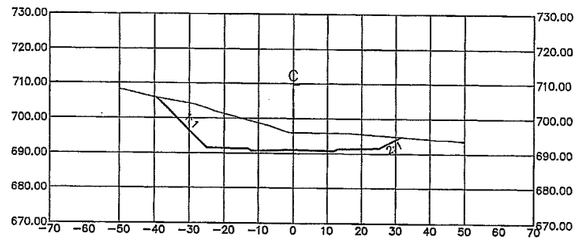
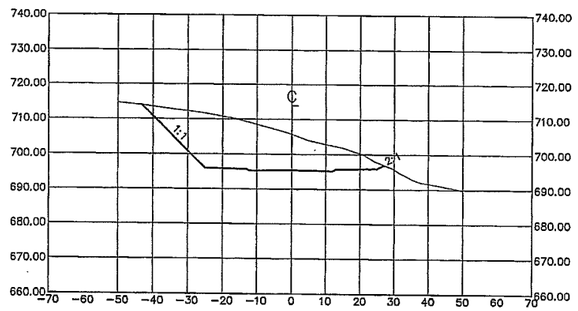
P.O. Box 376 Rutland, MA 01543
(508) 829-7222 Ph (508) 829-7622 Fax

Date: September 07, 2015
Drawn By: RMG
Checked By: JBK
Job #: 907-13

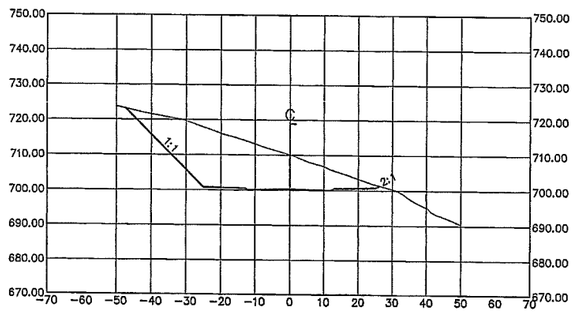
X-05



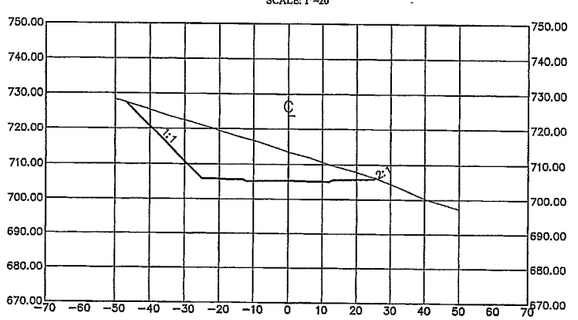
CROSS SECTION
DEANNA DRIVE (STA. 35+00)
SCALE: 1"=20'



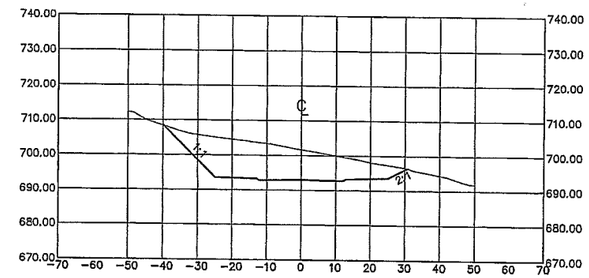
CROSS SECTION
DEANNA DRIVE (STA. 36+00)
SCALE: 1"=20'



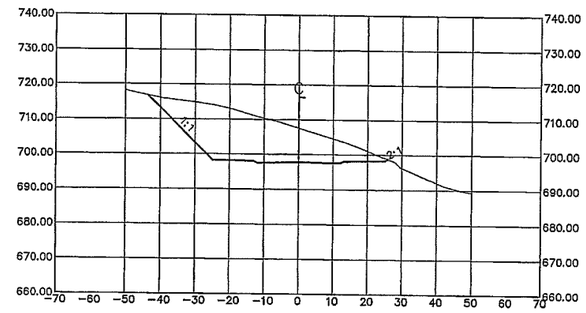
CROSS SECTION
DEANNA DRIVE (STA. 37+50)
SCALE: 1"=20'



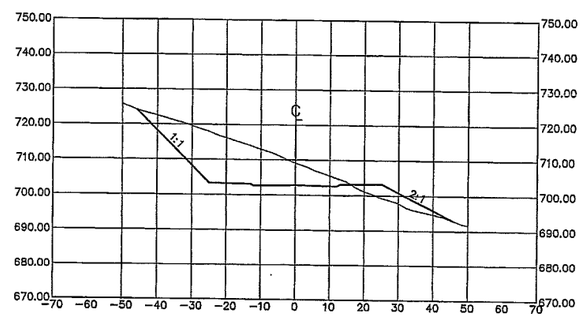
CROSS SECTION
DEANNA DRIVE (STA. 38+00)
SCALE: 1"=20'



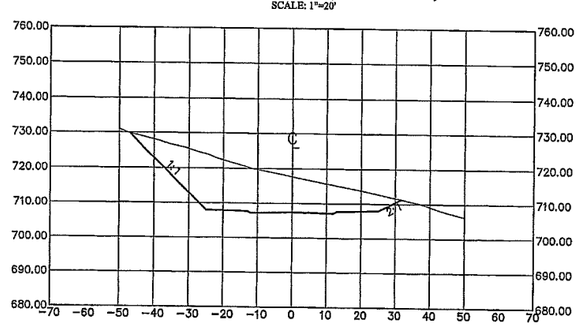
CROSS SECTION
DEANNA DRIVE (STA. 35+50)
SCALE: 1"=20'



CROSS SECTION
DEANNA DRIVE (STA. 36+50)
SCALE: 1"=20'



CROSS SECTION
DEANNA DRIVE (STA. 37+50)
SCALE: 1"=20'



CROSS SECTION
DEANNA DRIVE (STA. 38+50)
SCALE: 1"=20'

REVISIONS

REV	DATE	COMMENT	BY
1	9/28/16	MULTIPLE REVISIONS	RMG
2	12/19/16	MULTIPLE REVISIONS	RMG
3	1/31/17	MULTIPLE REVISIONS	RMG
4	5/10/17	MULTIPLE REVISIONS	RMG

COMMONWEALTH OF MASSACHUSETTS
JAMES B. KALLOCH
No. 24532
REGISTERED PROFESSIONAL ENGINEER

James B. Kalloch - PE No.24532

LEGEND

Existing Grade _____

Proposed Grade _____

THIS ENDORSEMENT MAKES NO DETERMINATION AS TO ZONING COMPLIANCE OR PLAN ACCURACY.

APPROVAL UNDER THE SUBDIVISION CONTROL LAW IS REQUIRED.

HOLDEN PLANNING BOARD:

_____

_____

_____

_____

_____

Date: _____

Certificate of No Appeal

Decision of the Town of Holden Planning Board approving this plan was recorded in the office of the Holden Town Clerk on
Date:_____
And no notice of appeal there from received by the Holden Town Clerk during the 20 days following.

_____
Town Clerk Date

AMENDED DEFINITIVE PLAN GREENWOOD II

LOCATED ON
UNION STREET
HOLDEN, MASSACHUSETTS

SCALE: AS NOTED

OWNED BY & PREPARED FOR

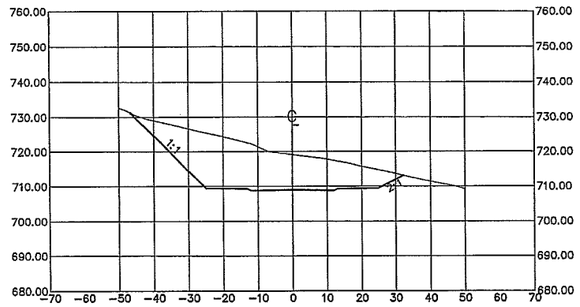
JACKSON WOODS INVESTMENTS, LLC.
87 MAIN STREET
RUTLAND, MA. 01543

New England Environmental Design, LLC

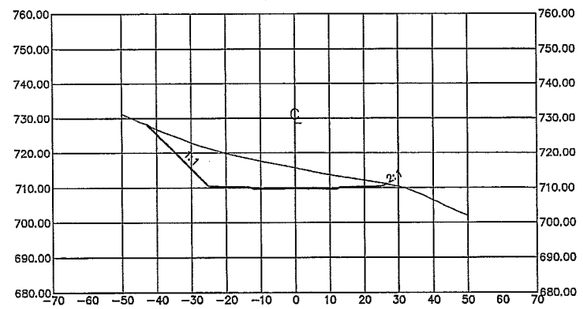
Environmental Consultants ▮ Civil Engineering Consultants
Land Surveying Consultants
P.O. Box 376 Rutland, MA 01543
(508) 829-7222 Ph (508) 829-7522 Fax

Date: September 07, 2015
Drawn By: RMG
Checked By: JBK
Job #: 907-13

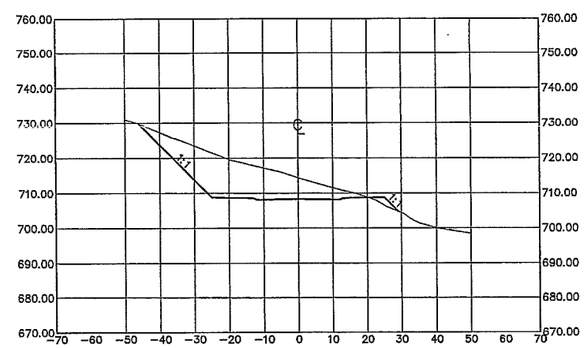
X-06



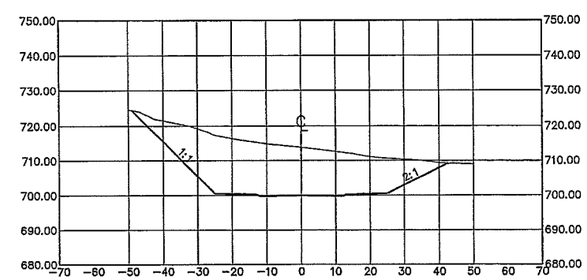
CROSS SECTION
DEANNA DRIVE (STA. 39+00)
SCALE: 1"=20'



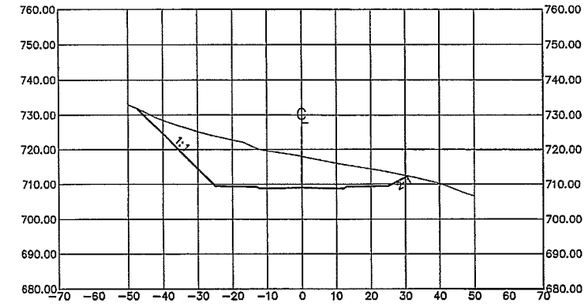
CROSS SECTION
DEANNA DRIVE (STA. 40+00)
SCALE: 1"=20'



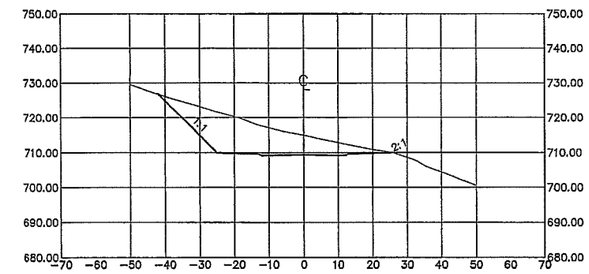
CROSS SECTION
DEANNA DRIVE (STA. 41+50)
SCALE: 1"=20'



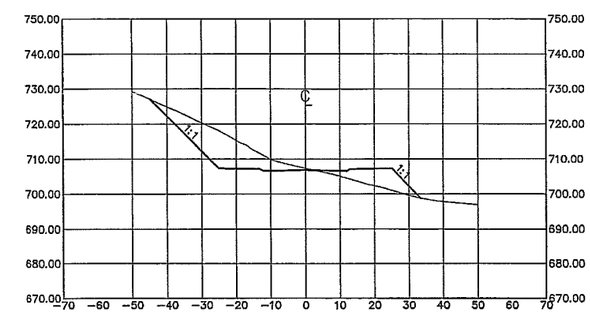
CROSS SECTION
DEANNA DRIVE (STA. 46+50)
SCALE: 1"=20'



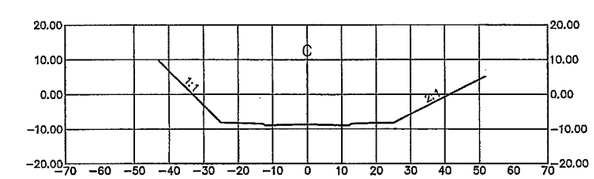
CROSS SECTION
DEANNA DRIVE (STA. 39+50)
SCALE: 1"=20'



CROSS SECTION
DEANNA DRIVE (STA. 40+50)
SCALE: 1"=20'



CROSS SECTION
DEANNA DRIVE (STA. 41+00)
SCALE: 1"=20'



CROSS SECTION
DEANNA DRIVE (STA. 47+00)
SCALE: 1"=20'

REVISIONS

REV	DATE	COMMENT	BY
1	9/28/16	MULTIPLE REVISIONS	RMG
2	12/19/16	MULTIPLE REVISIONS	RMG
3	1/31/17	MULTIPLE REVISIONS	RMG
4	5/10/17	MULTIPLE REVISIONS	RMG

COMMONWEALTH OF MASSACHUSETTS
JAMES B. KALLOCH
No. 24532
REGISTERED PROFESSIONAL ENGINEER

James B. Kalloch - PE No.24532

LEGEND

Existing Grade _____

Proposed Grade _____

THIS ENDORSEMENT MAKES NO DETERMINATION AS TO ZONING COMPLIANCE OR PLAN ACCURACY.

APPROVAL UNDER THE SUBDIVISION CONTROL LAW IS REQUIRED.

HOLDEN PLANNING BOARD:

_____

_____

_____

_____

_____

Date: _____

Certificate of No Appeal

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Date:_____
And no notice of appeal there from received by the Holden Town Clerk during the 20 days following.

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Town Clerk Date

AMENDED DEFINITIVE PLAN GREENWOOD II

LOCATED ON
UNION STREET
HOLDEN, MASSACHUSETTS

SCALE: AS NOTED

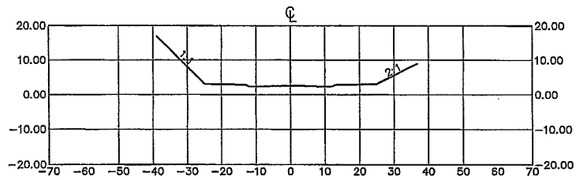
OWNED BY & PREPARED FOR

JACKSON WOODS INVESTMENTS, LLC.
87 MAIN STREET
RUTLAND, MA. 01543

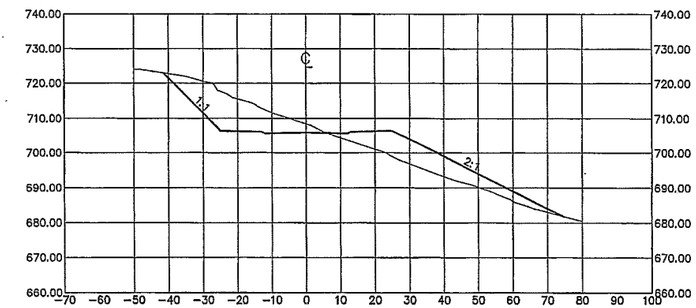
New England Environmental Design, LLC

Environmental Consultants ■ Civil Engineering Consultants
Land Surveying Consultants
P.O. Box 376 Rutland, MA 01543
(508) 829-7222 Ph (508) 829-7522 Fax

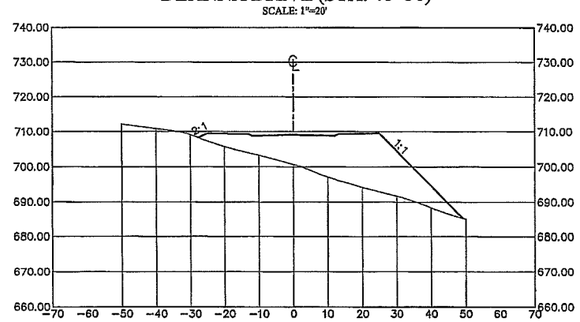
Date: September 07, 2015	X-07
Drawn By: RMG	
Checked By: JBK	
Job #: 907-13	Sheet 7 of 13



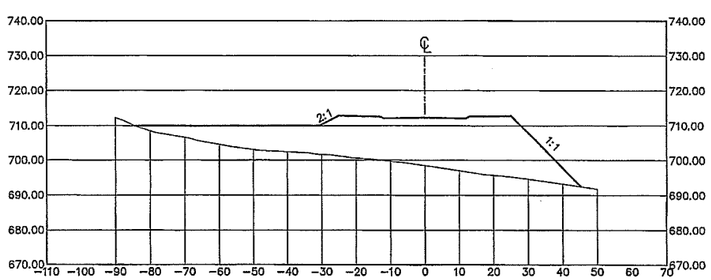
CROSS SECTION
DEANNA DRIVE (STA. 47+50)
SCALE: 1"=20'



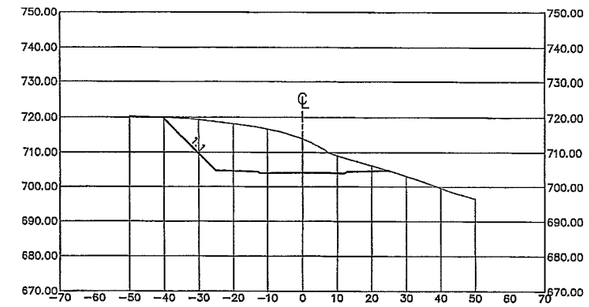
CROSS SECTION
DEANNA DRIVE (STA. 48+50)
SCALE: 1"=20'



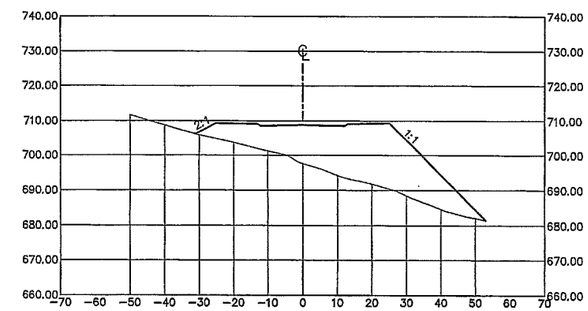
CROSS SECTION
DEANNA DRIVE (STA. 49+50)
SCALE: 1"=20'



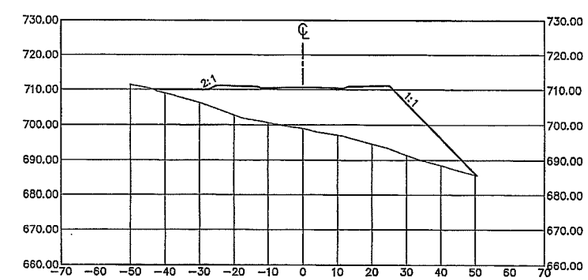
CROSS SECTION
DEANNA DRIVE (STA. 50+50)
SCALE: 1"=20'



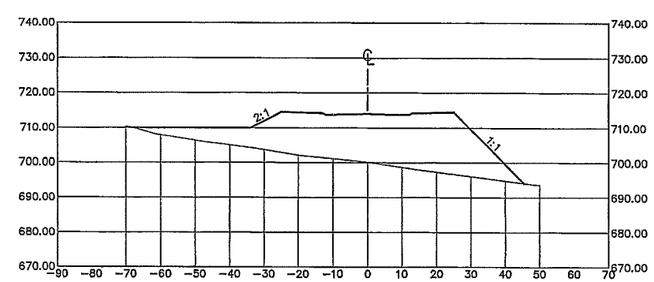
CROSS SECTION
DEANNA DRIVE (STA. 48+00)
SCALE: 1"=20'



CROSS SECTION
DEANNA DRIVE (STA. 49+00)
SCALE: 1"=20'



CROSS SECTION
DEANNA DRIVE (STA. 50+00)
SCALE: 1"=20'



CROSS SECTION
DEANNA DRIVE (STA. 51+00)
SCALE: 1"=20'

REVISIONS

REV	DATE	COMMENT	BY
1	9/28/16	MULTIPLE REVISIONS	RMG
2	12/19/16	MULTIPLE REVISIONS	RMG
3	1/31/17	MULTIPLE REVISIONS	RMG
4	5/10/17	MULTIPLE REVISIONS	RMG

COMMONWEALTH OF MASSACHUSETTS
JAMES B. KALLOCH
No. 24532
REGISTERED PROFESSIONAL ENGINEER

James B. Kalloch - PE No.24532

LEGEND

Existing Grade _____

Proposed Grade _____

THIS ENDORSEMENT MAKES NO DETERMINATION AS TO ZONING COMPLIANCE OR PLAN ACCURACY.

APPROVAL UNDER THE SUBDIVISION CONTROL LAW IS REQUIRED.

HOLDEN PLANNING BOARD:

_____

_____

_____

_____

Date: _____

Certificate of No Appeal
Decision of the Town of Holden Planning Board approving this plan was recorded in the office of the Holden Town Clerk on
Date:_____
And no notice of appeal there from received by the Holden Town Clerk during the 20 days following.

Town Clerk _____ Date

AMENDED DEFINITIVE PLAN GREENWOOD II

LOCATED ON
UNION STREET
HOLDEN, MASSACHUSETTS

SCALE: AS NOTED

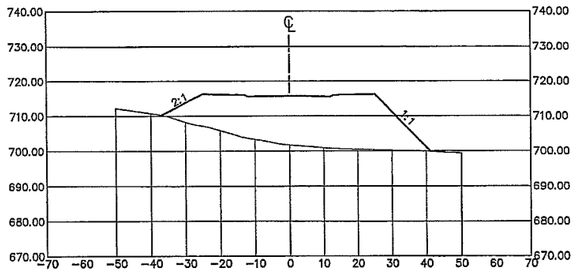
OWNED BY & PREPARED FOR

JACKSON WOODS INVESTMENTS, LLC.
87 MAIN STREET
RUTLAND, MA. 01543

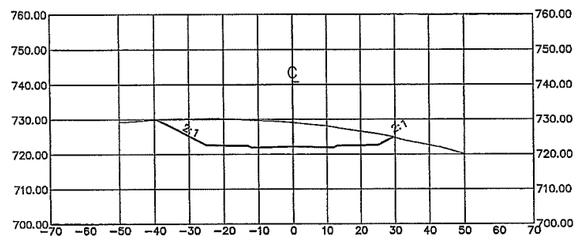
New England Environmental Design, LLC
Environmental Consultants ■ Civil Engineering Consultants
Land Surveying Consultants
P.O. Box 376 Rutland, MA 01543
(508) 829-7222 Ph (508) 829-7522 Fax

Date: September 07, 2015
Drawn By: RMG
Checked By: JBK
Job #: 907-13

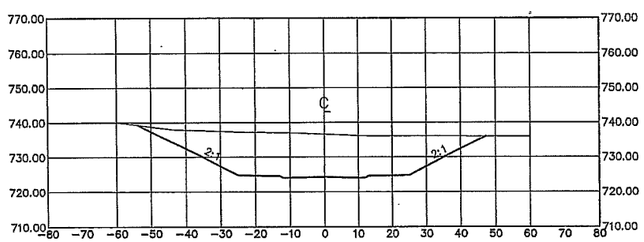
X-08



CROSS SECTION
DEANNA DRIVE (STA. 51+50)
SCALE: 1"=20'
Station 51+50

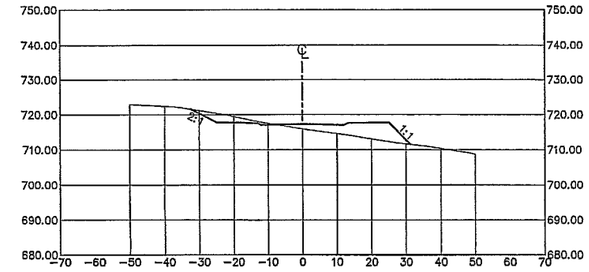


Station 52+50
CROSS SECTION
DEANNA DRIVE (STA. 52+50)
SCALE: 1"=20'

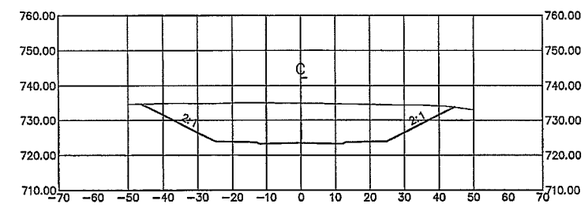


Station 53+50

CROSS SECTION
DEANNA DRIVE (STA. 53+50)
SCALE: 1"=20'

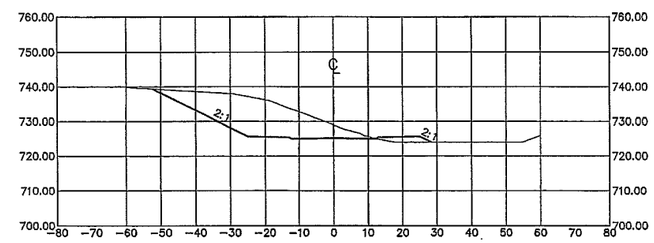


CROSS SECTION
DEANNA DRIVE (STA. 52+00)
SCALE: 1"=20'
Station 52+00



Station 53+00

CROSS SECTION
DEANNA DRIVE (STA. 53+00)
SCALE: 1"=20'



Station 54+00
CROSS SECTION
DEANNA DRIVE (STA. 54+00)
SCALE: 1"=20'

REVISIONS

REV	DATE	COMMENT	BY
1	9/28/16	MULTIPLE REVISIONS	RMG
2	12/19/16	MULTIPLE REVISIONS	RMG
3	1/31/17	MULTIPLE REVISIONS	RMG
4	5/10/17	MULTIPLE REVISIONS	RMG

COMMONWEALTH OF MASSACHUSETTS
JAMES B. KALLOCH
No. 24532
REGISTERED PROFESSIONAL ENGINEER

James B. Kalloch - PE No.24532

LEGEND

Existing Grade _____
Proposed Grade _____

THIS ENDORSEMENT MAKES NO DETERMINATION AS TO ZONING COMPLIANCE OR PLAN ACCURACY.

APPROVAL UNDER THE SUBDIVISION CONTROL LAW IS REQUIRED.

HOLDEN PLANNING BOARD:

_____
_____
_____
_____
_____

Date: _____

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Decision of the Town of Holden Planning Board approving this plan was recorded in the office of the Holden Town Clerk on
Date:_____
And no notice of appeal there from received by the Holden Town Clerk during the 20 days following.

_____
Town Clerk Date

AMENDED DEFINITIVE PLAN GREENWOOD II

LOCATED ON
UNION STREET
HOLDEN, MASSACHUSETTS

SCALE: AS NOTED

OWNED BY & PREPARED FOR

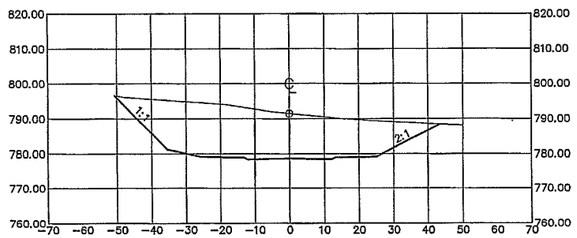
JACKSON WOODS INVESTMENTS, LLC.
87 MAIN STREET
RUTLAND, MA. 01543

New England Environmental Design, LLC
Environmental Consultants ■ Civil Engineering Consultants
Land Surveying Consultants
P.O. Box 376 Rutland, MA 01543
(508) 829-7222 Ph (508) 829-7522 Fax

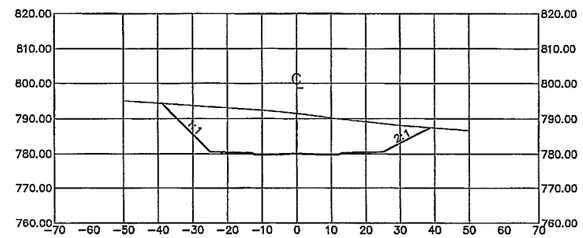
Date: September 07, 2015
Drawn By: RMG
Checked By: JBK
Job #: 907-13

X-09

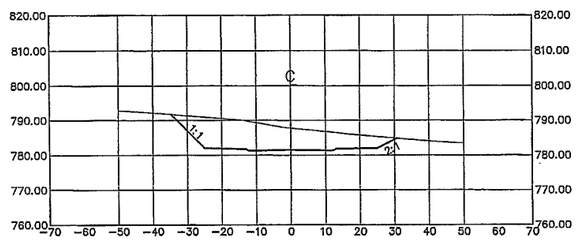
GRACE'S WAY



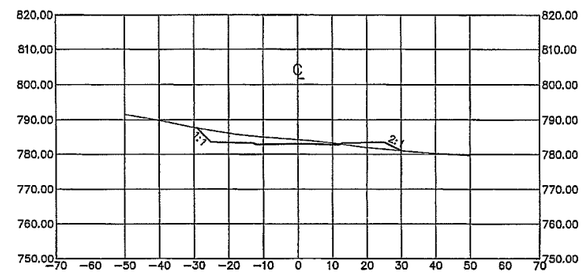
CROSS SECTION
GRACE'S WAY (STA. 0+50)
SCALE: 1"=20'



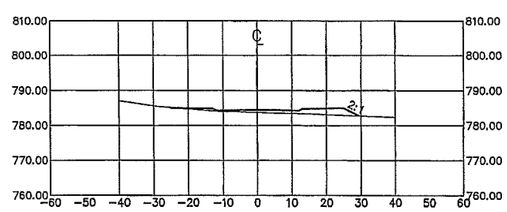
CROSS SECTION
GRACE'S WAY (STA. 1+00)
SCALE: 1"=20'



CROSS SECTION
GRACE'S WAY (STA. 1+50)
SCALE: 1"=20'



CROSS SECTION
GRACE'S WAY (STA. 2+00)
SCALE: 1"=20'



CROSS SECTION
GRACE'S WAY (STA. 2+50)
SCALE: 1"=20'

REVISIONS

REV	DATE	COMMENT	BY
1	6/13/16	MULTIPLE REVISIONS	RMG
2	9/28/16	MULTIPLE REVISIONS	RMG
3	12/19/16	MULTIPLE REVISIONS	RMG
4	1/31/17	MULTIPLE REVISIONS	RMG

COMMONWEALTH OF MASSACHUSETTS
JAMES B. KALLOCH
No. 24532
REGISTERED PROFESSIONAL ENGINEER

James B. Kalloch - PE No.24532

LEGEND

Existing Grade ————————
Proposed Grade ————————

THIS ENDORSEMENT MAKES NO DETERMINATION AS TO ZONING COMPLIANCE OR PLAN ACCURACY.

APPROVAL UNDER THE SUBDIVISION CONTROL LAW IS REQUIRED.

HOLDEN PLANNING BOARD:

Date: _____

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Date: _____
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Town Clerk Date

AMENDED DEFINITIVE PLAN GREENWOOD II

LOCATED ON
UNION STREET
HOLDEN, MASSACHUSETTS

SCALE: AS NOTED

OWNED BY & PREPARED FOR

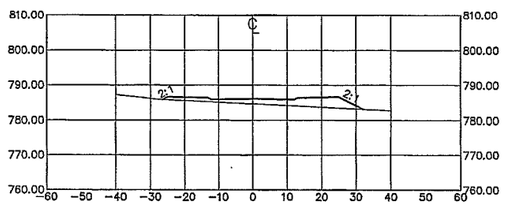
JACKSON WOODS INVESTMENTS, LLC.
87 MAIN STREET
RUTLAND, MA. 01543

New England Environmental Design, LLC

Environmental Consultants ■ Civil Engineering Consultants
Land Surveying Consultants
P.O. Box 376 Rutland, MA 01543
(508) 829-7222 Ph (508) 829-7522 Fax

Date: September 07, 2015
Drawn By: RMG
Checked By: JBK
Job #: 907-13

X-10



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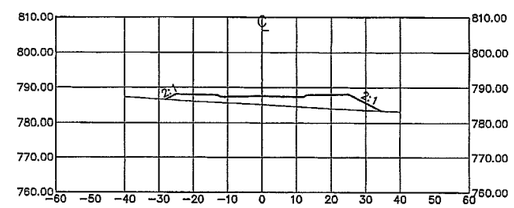

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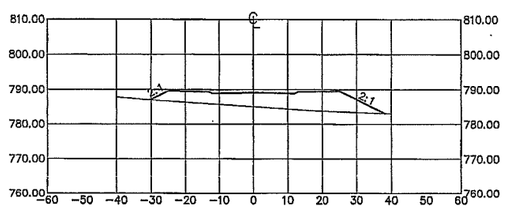

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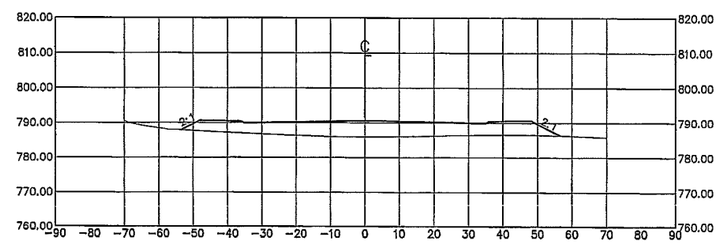

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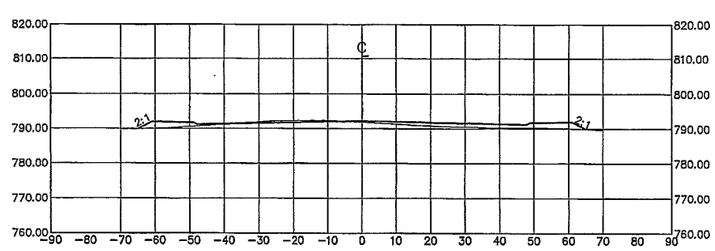

CROSS SECTION
GRACE'S WAY (STA.5+00)
SCALE: 1"=20'

REVISIONS

REV	DATE	COMMENT	BY
1	6/13/16	MULTIPLE REVISIONS	RMG
2	9/28/16	MULTIPLE REVISIONS	RMG
3	12/19/16	MULTIPLE REVISIONS	RMG
4	1/31/17	MULTIPLE REVISIONS	RMG

COMMONWEALTH OF MASSACHUSETTS
JAMES B. KALLOCH
No. 24532
REGISTERED PROFESSIONAL ENGINEER

James B. Kalloch - PE No.24532

LEGEND

Existing Grade ————————
Proposed Grade ————————

THIS ENDORSEMENT MAKES NO DETERMINATION AS TO ZONING COMPLIANCE OR PLAN ACCURACY.

APPROVAL UNDER THE SUBDIVISION CONTROL LAW IS REQUIRED.

HOLDEN PLANNING BOARD:

_____
_____
_____
_____
_____

Date: _____

Certificate of No Appeal
Decision of the Town of Holden Planning Board approving this plan was recorded in the office of the Holden Town Clerk on
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Town Clerk Date

AMENDED DEFINITIVE PLAN GREENWOOD II

LOCATED ON
UNION STREET
HOLDEN, MASSACHUSETTS

SCALE: AS NOTED

OWNED BY & PREPARED FOR

JACKSON WOODS INVESTMENTS, LLC.
87 MAIN STREET
RUTLAND, MA. 01543

New England Environmental Design, LLC
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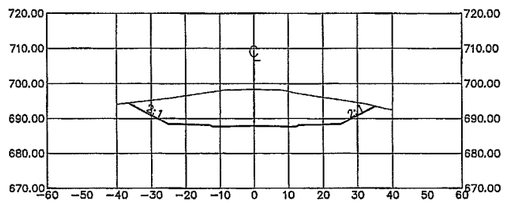
Date: September 07, 2015
Drawn By: RMG
Checked By: JBK
Job #: 907-13

X-11

Sheet 11 of 13

STEPHANIE DRIVE



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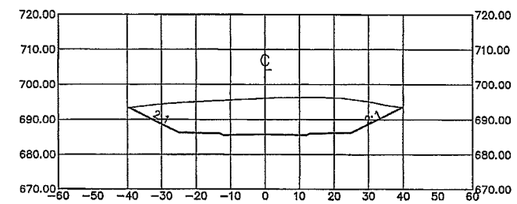
SCALE: 1"=20'



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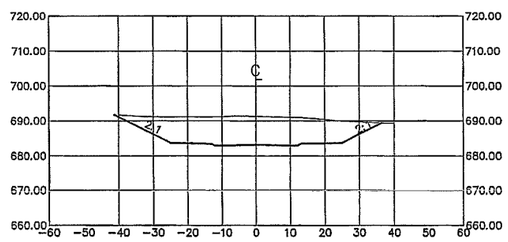

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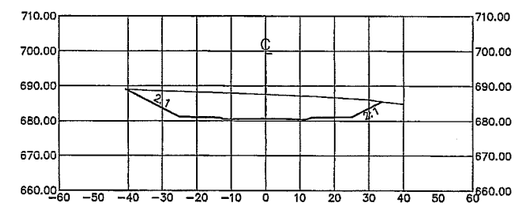
SCALE: 1"=20'



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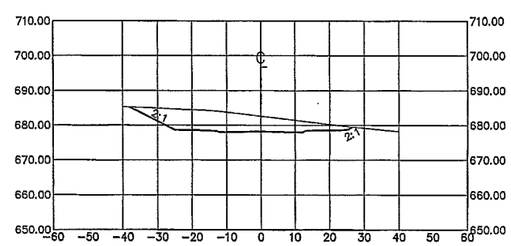
STEPHANIE DRIVE (STA. 2+00)
SCALE: 1"=20'



CROSS SECTION
STEPHANIE DRIVE (STA. 2+50)
SCALE: 1"=20'

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REV	DATE	COMMENT	BY
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COMMONWEALTH OF MASSACHUSETTS
JAMES B. KALLOCH
No. 24532
REGISTERED PROFESSIONAL ENGINEER

James B. Kalloch - PE No.24532

LEGEND

Existing Grade _____

Proposed Grade _____

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LOCATED ON
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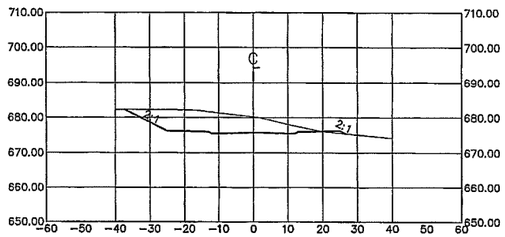

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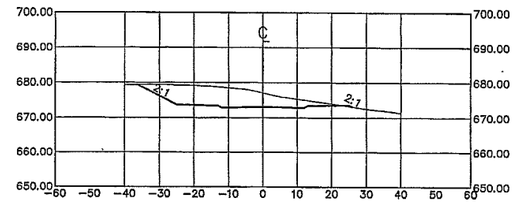
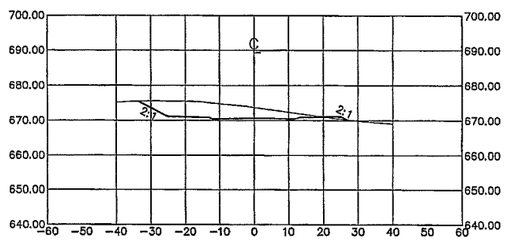
SCALE: 1"=20'



CROSS SECTION
STEPHANIE DRIVE (STA. 3+50)
SCALE: 1"=20'



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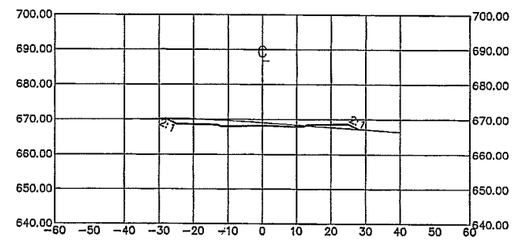
SCALE: 1"=20'



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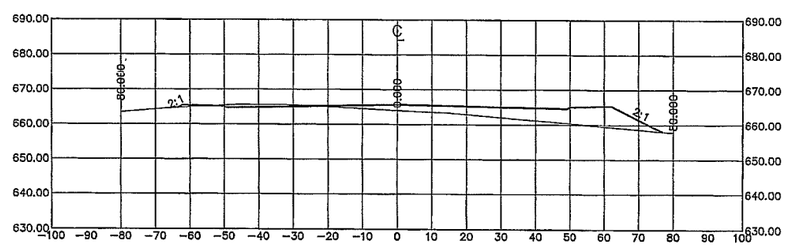
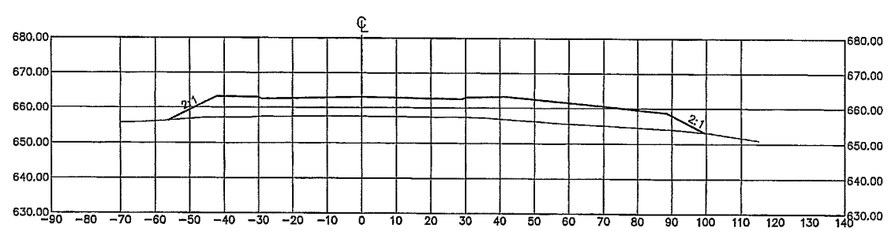


CROSS SECTION
STEPHANIE DRIVE (STA. 5+00)
SCALE: 1"=20'



CROSS SECTION
STEPHANIE DRIVE (STA. 5+50)
SCALE: 1"=20'

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COMMONWEALTH OF MASSACHUSETTS
JAMES B. KALLOCH
No. 24532
REGISTERED PROFESSIONAL ENGINEER

James B. Kalloch - PE No.24532

LEGEND

Existing Grade _____

Proposed Grade _____

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LOCATED ON
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HOLDEN, MASSACHUSETTS

SCALE: AS NOTED

OWNED BY & PREPARED FOR

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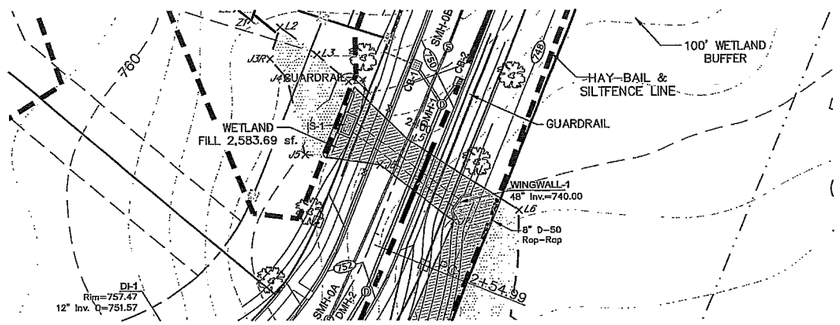
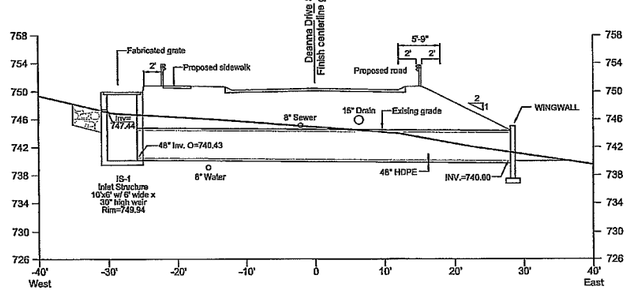
Sheet 13 of 13



GENERAL WETLAND CROSSING NOTES:

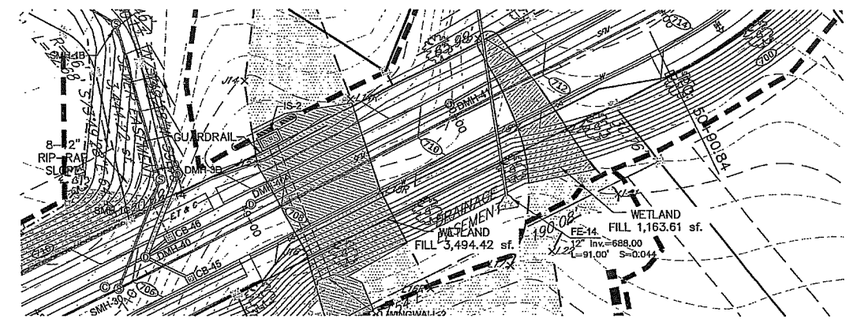
1. PROVIDE EROSION CONTROL BARRIERS WHERE SHOWN UPSTREAM AND DOWNSTREAM OF THE CROSSING LOCATION.
2. PERFORM CONSTRUCTION OF CROSSING DURING LOW FLOW OF NO FLOW.
3. IF FLOW IS ENCOUNTERED, PROVIDE TEMPORARY SANDBAG DAM AND PUMP SYSTEM UPSTREAM TO DIVERT STREAM AROUND CONSTRUCTION AREA. PROVIDE DEWATERING BASIN IF PUMPING IS REQUIRED.
4. EXCAVATE REPLICATION AREA TO SUBGRADE AND UTILIZE TOPSOIL REMOVED FROM PROPOSED CROSSING WITH REPLICATION AREA (AUGMENT SOILS PER DEP REPLICATION GUIDELINES) REPLICATION AREA SHALL BE PLANTED IN ACCORDANCE WITH DEP REPLICATION GUIDELINES.
5. PROVIDE 12" SCREENED GRAVEL FOR FOOTING BEDDING AND INSTALL FOOTINGS AND CULVERT.
6. TRENCH / INSTALL AND BACKFILL DRAINAGE, WATER AND UTILITIES.
7. RESTORE ANY DISTURBANCE TO EXISTING WETLANDS.

Plan View
(SCALE: 1"=30')



Section View
(SCALE: 1"=10')

WETLAND CROSSING NO. 1 (STATION 2+18.54)



GENERAL WETLAND CROSSING NOTES:

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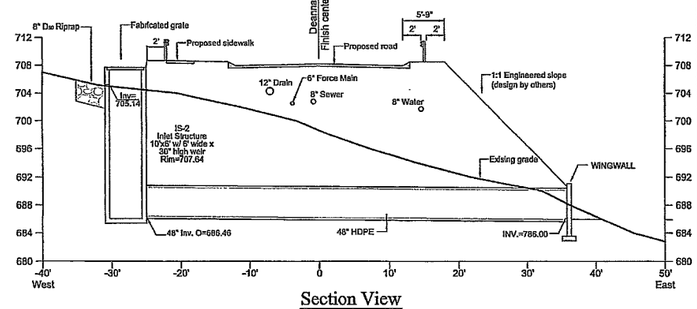
Plan View
(SCALE: 1"=30')



Section View
(SCALE: 1"=10')

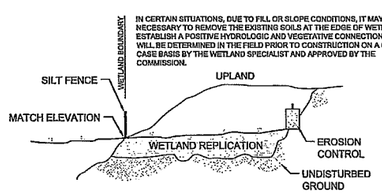
WETLAND CROSSING NO. 2 (STATION 49+21)

CONSTRUCTION SEQUENCE FOR WETLAND REPLICATION:

1. INSTALL PROPERLY TRENCHED SILT FENCING ALONG EDGE OF WETLANDS
2. EXISTING AND PROPOSED WETLAND BOUNDARIES ARE TO BE CLEARLY MARKED PRIOR TO CONSTRUCTION .
3. CUT TREES, STRIP, GRUB, AND EXCAVATE REPLICATION AREA. ANY LARGE ROCKS ENCOUNTERED DURING EXCAVATION MAY BE LEFT IN PLACE TO PROVIDE ADDITIONAL WILDLIFE HABITAT.
4. IF STOCKPILING ANY EXCAVATED WETLAND SOIL IT SHALL BE FOR SHORT PERIODS OF TIME ONLY AND SUCH PILES SHALL BE COVERED TO PREVENT LEACHING OR DEHYDRATION.
5. THE SPECIFIED PLANT SPECIES SHALL BE PLANTED IN THE REPLICATION AREA BY TRANSPLANT FROM ON-SITE OR NURSERY STOCK. SHRUBS SHALL BE PLANTED WITH AN AVERAGE SPACING OF 6' o.c., WOOD VEGETATION SHALL NOT BE PLANTED IN ROWS.
6. UPON COMPLETION OF GRADING OF THE REPLICATED AREA EROSION CONTROL SHALL BE INSTALLED ALONG THE UPPER BOUNDARY OF THE WETLAND REPLICATION AREA.
7. THE REPLICATION AREA SHALL BE MULCHED WITH 1 TO 2 INCHES OF LEAF COMPOST OR OR STRAW TO PROVIDE TEMPORARY EROSION CONTROL AND MOISTURE RETENTION.
8. THE REPLICATED AREAS ARE TO BE INSPECTED UPON COMPLETION AND DURING EACH OF THE TWO GROWING SEASONS FOLLOWING CONSTRUCTION.
9. EROSION CONTROL SHALL REMAIN THROUGHOUT CONSTRUCTION AND REPAIRED OR REPLACED AS NECESSARY.

ALL WETLAND REPLICATION AREAS ARE TO BE SEEDED WITH NEW ENGLAND WETLAND SEED MIX.

IN CERTAIN SITUATIONS, DUE TO FILL OR SLOPE CONDITIONS, IT MAY BE NECESSARY TO REMOVE THE EXISTING SOILS AT THE EDGE OF WETLAND TO ESTABLISH A POSITIVE HYDROLOGIC AND VEGETATIVE CONNECTION. THIS WILL BE DETERMINED IN THE FIELD PRIOR TO CONSTRUCTION ON A CASE BY CASE BASIS BY THE WETLAND SPECIALIST AND APPROVED BY THE COMMISSION.



WETLAND REPLICATION CONSTRUCTION

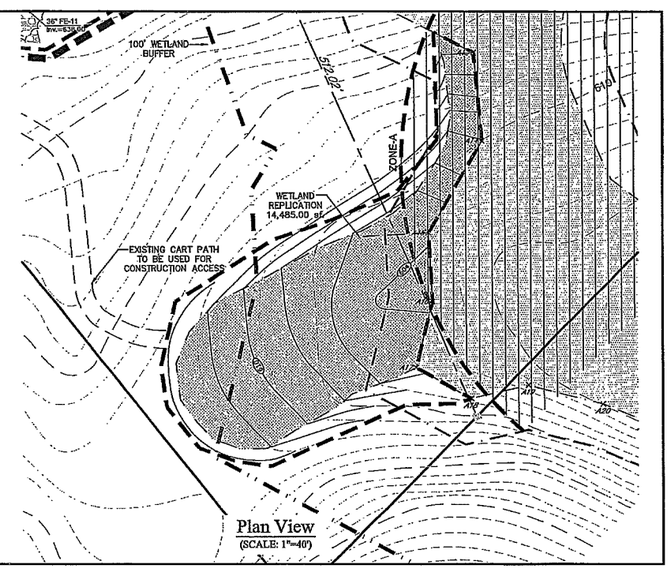
WETLAND ALTERATION AREAS

TOTAL WETLAND FILL AREA =7,241.72 s.f.

TOTAL REPLICATION AREA REQUIRED = 14,483.44 s.f.

TOTAL REPLICATION AREA PROVIDED =14,485.00 s.f.

AREA TEMPORARY ALTERED BY CONSTRUCTION = 1,291.94 s.f.



Plan View
(SCALE: 1"=40')

REVISIONS

REV	DATE	COMMENT	BY
1	7/11/17	MULTIPLE REVISIONS	RMG
2	9/07/17	MULTIPLE REVISIONS	RMG
3	9/19/17	MULTIPLE REVISIONS	RMG
4	10/13/17	MULTIPLE REVISIONS	RMG
5	11/09/17	MULTIPLE REVISIONS	RMG

COMMONWEALTH OF MASSACHUSETTS
JAMES B. KALLOCH
No. 24532
REGISTERED PROFESSIONAL ENGINEER

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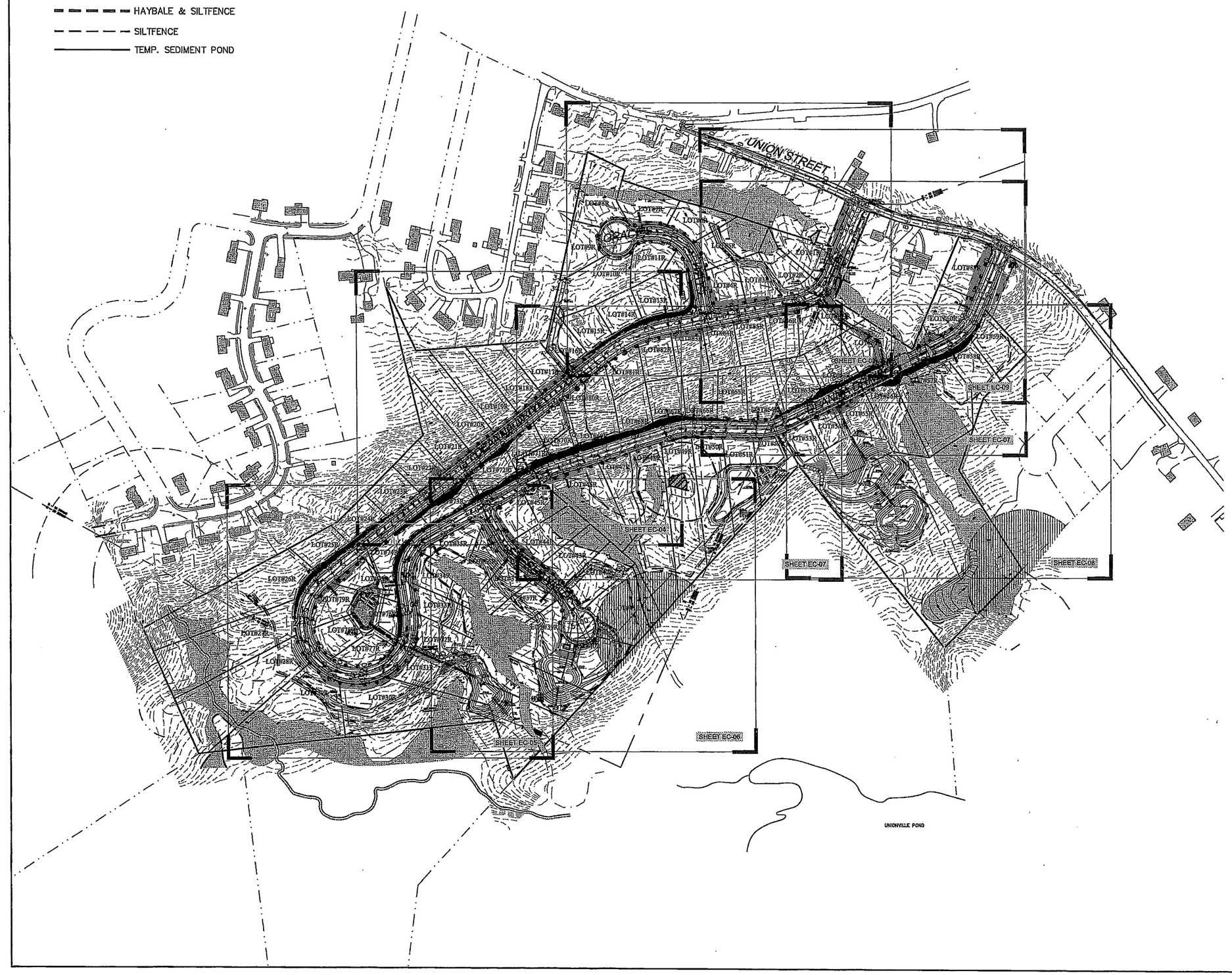
TYPICAL LEGEND

DRILL HOLE		EXIST. UTILITY POLE	
IRON PIPE		EXIST. CATCH BASIN	
CONCRETE BOUND		P. CATCH BASIN	
GRANITE BOUND		P. DRAIN MANHOLE	
BOUNDARY LINE		P. DRAINAGE LINE	
PROP. LOT LINE		P. SEWER MANHOLE	
EASEMENT LINE		P. SEWER CLEANOUT	
SETBACK LINE		P. SEWER LIN

LEGEND:

- WOOD CHIP BERM
- HAYBALE & SILTFENCE
- SILTFENCE
- TEMP. SEDIMENT POND



REVISIONS

REV	DATE	COMMENT	BY
1	11/30/16	MULTIPLE REVISIONS	RMG
2	12/16/16	MULTIPLE REVISIONS	RMG
3	1/31/17	MULTIPLE REVISIONS	RMG
4	5/10/17	MULTIPLE REVISIONS	RMG
5	7/11/17	MULTIPLE REVISIONS	RMG

COMMONWEALTH OF MASSACHUSETTS
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REGISTERED PROFESSIONAL ENGINEER

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EROSION CONTROL NOTES

1. THOSE AREAS UNDERGOING ACTUAL CONSTRUCTION WILL BE LEFT IN AN UNTREATED OR UN VEGETATED CONDITION FOR A MINIMUM TIME. AREAS SHALL BE PERMANENTLY STABILIZED WITHIN 15 DAYS OF FINAL GRADING AND TEMPORARILY STABILIZED WITHIN 30 DAYS OF INITIAL DISTURBANCE OF THE SOIL. IF THE DISTURBANCE IS WITHIN 100 FEET OF A STREAM OR POND, THE AREA SHALL BE STABILIZED WITHIN 7 DAYS OR PRIOR TO ANY STORM EVENT (THIS WOULD INCLUDE WETLANDS).
2. SEDIMENT BARRIERS (SILT FENCE, HAY BARRIERS, ETC.) SHOULD BE INSTALLED PRIOR TO ANY SOIL DISTURBANCE OF THE CONTRIBUTING DRAINAGE AREA ABOVE THEM. MULCH NETTING SHALL BE USED TO ANCHOR MULCH IN ALL AREAS WITH SLOPES GREATER THAN 16% AFTER OCTOBER 1ST THE SAME APPLIES FOR ALL SLOPES GREATER THAN 8%.
3. ALL EROSION CONTROL STRUCTURES WILL BE INSPECTED, REPLACED AND/OR REPAIRED EVERY 7 DAYS AND IMMEDIATELY FOLLOWING ANY SIGNIFICANT RAINFALL OR SNOW MELT OR WHEN NO LONGER SERVICEABLE DUE TO SEDIMENT ACCUMULATION OR DECOMPOSING. SEDIMENT DEPOSITS SHOULD BE REMOVED AFTER EACH STORM EVENT. THEY MUST BE REMOVED WHEN DEPOSITS REACH APPROXIMATELY ONE HALF THE HEIGHT OF THE BARRIER. SEDIMENT CONTROL DEVICES SHALL REMAIN IN PLACE AND BE MAINTAINED BY THE CONTRACTOR UNTIL AREAS UP SLOPE ARE STABILIZED.
4. THE AREA OF DISTURBANCE SHALL BE KEPT TO A MINIMUM. DISTURBED AREAS REMAINING IDLE FOR MORE THAN 14 DAYS SHALL BE STABILIZED.
5. ALL TEMPORARY EROSION CONTROL MEASURES SHALL BE REMOVED ONCE THE SITE IS STABILIZED.
6. WETLANDS WILL BE PROTECTED WITH HAYBALES AND/OR SILT FENCE INSTALLED AT THE EDGE OF THE WETLAND OR THE BOUNDARY OF WETLAND DISTURBANCE.
7. ALL AREAS WITHIN 100 FEET OF A FLAGGED WETLAND OR STREAM SHALL FOLLOW APPROPRIATE EROSION CONTROL MEASURES PRIOR TO EACH STORM IF NOT BEING ACTIVELY WORKED.

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AMENDED DEFINITIVE PLAN GREENWOOD II

LOCATED ON
UNION STREET
HOLDEN, MASSACHUSETTS

SCALE: 1" = 150'

OWNED BY & PREPARED FOR

JACKSON WOODS INVESTMENTS, LLC.
87 MAIN STREET
RUTLAND, MA. 01543

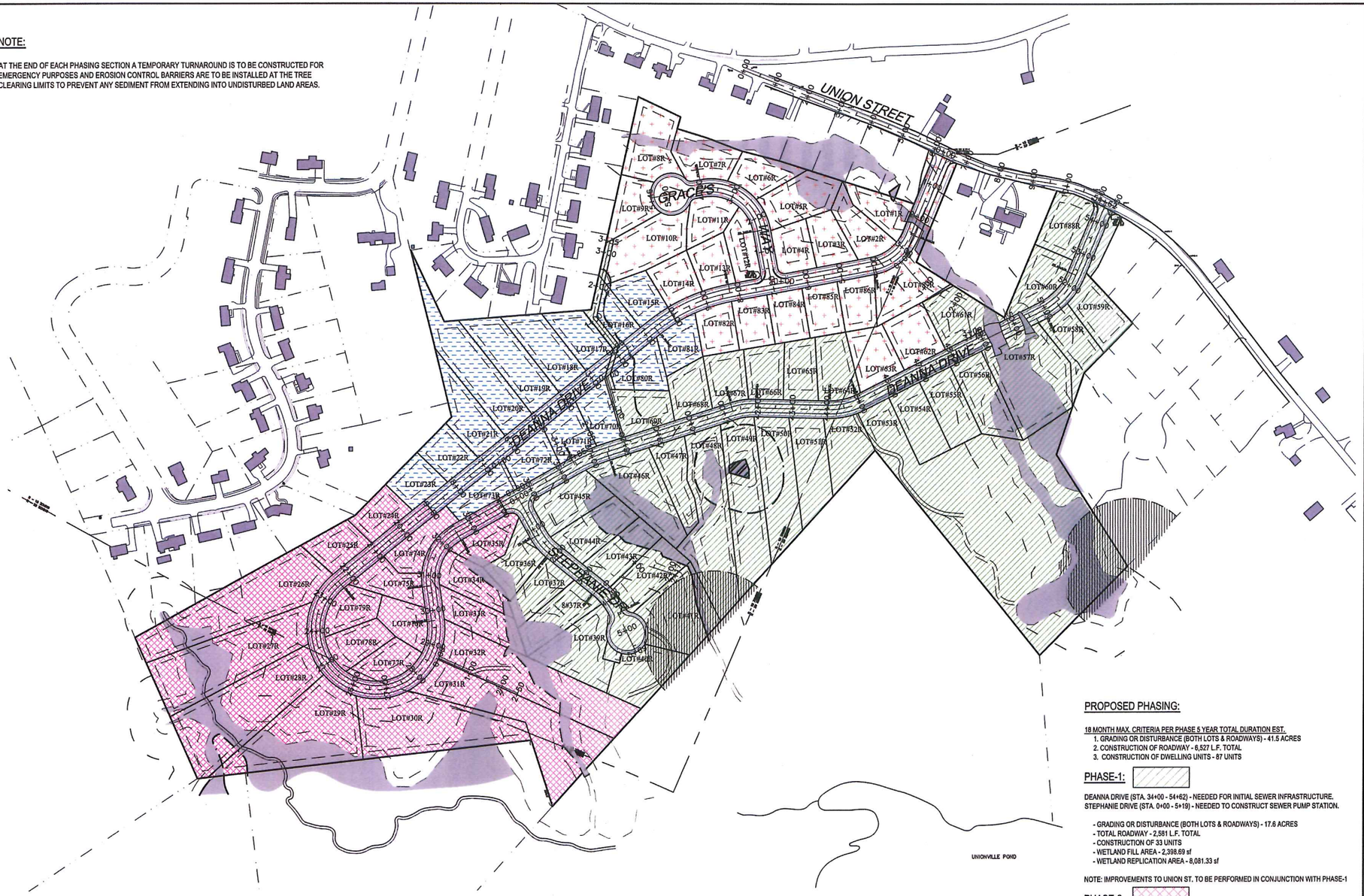
New England Environmental Design, LLC

Environmental Consultants ■ Civil Engineering Consultants
Land Surveying Consultants
P.O. Box 376 Rutland, MA 01543
(508) 829-7222 Ph (508) 829-7522 Fax

Date: September 07, 2015	EC-01
Drawn By: RMG	
Checked By: JBK	
Job #: 907-13	Sheet 1 of 9

NOTE:

AT THE END OF EACH PHASING SECTION A TEMPORARY TURNAROUND IS TO BE CONSTRUCTED FOR EMERGENCY PURPOSES AND EROSION CONTROL BARRIERS ARE TO BE INSTALLED AT THE TREE CLEARING LIMITS TO PREVENT ANY SEDIMENT FROM EXTENDING INTO UNDISTURBED LAND AREAS.



EROSION/SEDIMENT CONTROL CONSTRUCTION PROCEDURES:

PRIOR TO THE CONSTRUCTION PHASE OF ANY WORK , INSTALL EROSION/SEDIMENT CONTROL BARRIERS AS INDICATED ON THE PROJECT PLANS AND NOTIFY THE CONSERVATION COMMISSION FOR INSPECTION /ACCEPTANCE OF BARRIERS PRIOR TO PROCEEDING. THROUGHOUT THE CONSTRUCTION PROCESS AND UP TO THE POINT OF FINAL STABILIZATION OF ALL DISTURBED AREAS, THE EROSION/SEDIMENT CONTROL BARRIERS SHALL BE INSPECTED DAILY AND SHALL BE REPAIRED AND MAINTAINED AS NECESSARY. SIGNIFICANT ACCUMULATIONS OF SEDIMENT SHALL BE REMOVED ON A REGULAR BASIS AND BROADCAST LIGHTLY OVER WELL-VEGETATED UPLAND AREAS OF THE SITE AWAY FROM STORM DRAINAGE SYSTEM INLET POINTS.

INSTALL STABILIZED STONE CONSTRUCTION ENTRANCE AT THE INTERSECTIONS OF DEANNA DRIVE AND UNION STREET AT THE START OF PHASE 1 & 2, RESPECTIVELY, TO PREVENT MUD FROM LEAVING THE SITE ON THE TIRES OF CONSTRUCTION VEHICLES. DURING WET WEATHER, IT MAY BE NECESSARY TO ALSO PROVIDE A TEMPORARY WASHING STATION TO PREVENT THE SPREAD OF MUD ONTO THE PUBLIC STREET. IF A WASH STATION IS UTILIZED, ALL RUNOFF SHALL DIRECTED TO A TEMPORARY SEDIMENT COLLECTION AREA OUTSIDE THE DISTURBED PORTION OF THE RIGHT-OF-WAY.

CONSTRUCTION TRAFFIC SHOULD BE LIMITED TO THE SUBDIVISION ROADWAYS, AND PERIPHERAL AREAS TO BE GRADED TO THE EXTENT PRACTICABLE.

FOLLOWING INSTALLATION OF EROSION/SEDIMENT CONTROL BARRIERS AND CONSTRUCTION ENTRANCE, INITIAL SITE WORK SHALL INCLUDE CLEARING AND GRADING FOR THE CONSTRUCTION OF APPLICABLE PORTIONS OF THE ROADWAY, SURFACE UTILITIES, AND STORMWATER MANAGEMENT AREAS. THIS WORK SHALL PROCEED AS RAPIDLY AS POSSIBLE TO PAVEMENT INSTALLATION AND STABILIZATION OF OTHER DISTURBED AREAS TO MINIMIZE THE LENGTH OF TIME THAT DISTURBED EARTH IS EXPOSED TO THE ELEMENTS. COMPLETE CONSTRUCTION OF ROADWAY, UTILITIES, AND STORMWATER PONDS AND PERMANENTLY STABILIZE ALL DISTURBED AREAS PRIOR TO PROCEEDING WITH GRADING OF LOT AREAS.FINAL ROADWAY CROSS-SECTION DIRECTS ALL SURFACE WATER FROM THE EDGES OF THE RIGHT-OF-WAY TOWARDS THE CENTER. AT POINTS WHERE THE GENERAL ROADWAY SHAPE CAN BE ESTABLISHED EARLY ON, IT WILL PROVIDE A MEANS TO BETTER MANAGE THE STORMWATER THAT FALLS WITHIN THE RIGHT-OF-WAY.

STABILIZE THE EMBANKMENTS IMMEDIATELY UPON THERE COMPLETION. IN THE EVENT THAT IMMEDIATE STABILIZATION IS NOT POSSIBLE, PROVIDE TEMPORARY EARTH OR HAYBAIL DIVERSIONS ALONG THE TOP OF EXPOSED, DISTURBED SLOPES. DIRECT RUNOFF FROM THESE DIVERSIONS TO TEMPORARY SEDIMENT COLLECTION AREAS OUTSIDE THE DISTURBED PORTION OF THE RIGHT OF WAY. PARTICULAR ATTENTION SHOULD BE PAID TO PROPOSED SLOPES IN EXCESS OF 2:1 THAT ARE TO RECEIVE SLOPE-PAVING TREATMENT AS FINAL STABILIZATION. PLACE FINAL TREATMENT ON THESE SLOPES AS SOON AS POSSIBLE AFTER SHAPING TO MINIMIZE OPPORTUNITIES FOR DESTABILIZATION. PROVIDE TEMPORARY FLUME PIPES ACROSS THE UN-STABILIZED ROAD BED TO DIVERT RUNOFF OFF THE ROAD BED BEFORE LARGE VOLUMES AND VELOCITIES OF RUNOFF AREA GENERATED. RUNOFF DIVERTED BY THESE STRUCTURES SHALL BE DIRECTED TO TEMPORARY SEDIMENT COLLECTION AREAS OUTSIDE THE DISTURBED PORTION OF THE RIGHT-OF-WAY.

FOLLOWING THE COMPLETION OF ROADWAY PAVEMENT AND FINAL STABILIZATION OF APPURTENANT AREAS, THE GRADING OF LOT AREAS MAY PROCEED.THIS WORK SHALL MINIMIZE THE OF DISTURBED LAND THAT IS EXPOSED AT ANY GIVEN TIME, AND SHALL EMPLOY BEST MANAGEMENT PRACTICES TO CONTROL SUCH EROSION AND SEDIMENT AS MAY BE GENERATED DURING THE CONSTRUCTION PROCESS.

AT THE TIME THAT STORMWATER INLET STRUCTURES (CATCH BASINS, CULVERTS) BECOME OPERATIONAL, ALL INLETS SHALL RECEIVE INLET FILTER PROTECTION TO MINIMIZE THE AMOUNT OF SEDIMENT THAT MAY ENTER/PASS THROUGH THE STORMWATER MANAGEMENT SYSTEM. THESE INLETS SHALL BE INSPECTED ON A DAILY BASIS AND SHALL BE MAINTAINED AND REPAIRED AS NECESSARY.

UPON FINAL STABILIZATION OF ALL DISTURBED AREAS IN EACH PHASE, ACCUMULATED SEDIMENT SHALL BE REMOVED FROM ALL TEMPORARY SEDIMENT COLLECTION AREAS, CATCH BASIN SUMPS, SEDIMENT FOREBAYS AND ALONG EROSION/SEDIDMENT CONTROL BARRIERS.COLLECTED SEDIMENT SHALL BE BROADCAST LIGHTLY OVER WELL-VEGETATED UPLAND AREAS WITHIN LOTS 12-25 AND LOTS 62-86, AWAY FROM INLET POINTS TO THE STORM DRAINAGE SYSTEM.

PROPOSED PHASING:

18 MONTH MAX. CRITERIA PER PHASE 5 YEAR TOTAL DURATION EST.

1. GRADING OR DISTURBANCE (BOTH LOTS & ROADWAYS) - 41.5 ACRES
2. CONSTRUCTION OF ROADWAY - 6,527 L.F. TOTAL
3. CONSTRUCTION OF DWELLING UNITS - 87 UNITS

PHASE-1:

DEANNA DRIVE (STA. 34+00 - 54+62) - NEEDED FOR INITIAL SEWER INFRASTRUCTURE.
STEPHANIE DRIVE (STA. 0+00 - 5+19) - NEEDED TO CONSTRUCT SEWER PUMP STATION.

- GRADING OR DISTURBANCE (BOTH LOTS & ROADWAYS) - 17.6 ACRES
- TOTAL ROADWAY - 2,981 L.F. TOTAL
- CONSTRUCTION OF 33 UNITS
- WETLAND FILL AREA - 2,398.69 sf
- WETLAND REPLICATION AREA - 8,081.33 sf

NOTE: IMPROVEMENTS TO UNION ST. TO BE PERFORMED IN CONJUNCTION WITH PHASE-1

PHASE-2:

DEANNA DRIVE (STA. 19+00 - 34+00)

- GRADING OR DISTURBANCE (BOTH LOTS & ROADWAYS) - 8.6 ACRES
- TOTAL ROADWAY - 1500 L.F. TOTAL
- CONSTRUCTION OF 18 UNITS

PHASE-3:

GRACE'S WAY (STA. 0+00 - 5+46)
DEANNA DRIVE (STA. 0+00 - 10+00)

- GRADING OR DISTURBANCE (BOTH LOTS & ROADWAYS) - 7.9 ACRES
- TOTAL ROADWAY - 1546 L.F. TOTAL
- CONSTRUCTION OF 20 UNITS
- WETLAND FILL AREA -108.33 sf
- WETLAND REPLICATION AREA - 216.60 sf

PHASE-4:

DEANNA DRIVE (STA. 10+00 - 19+00)

- GRADING OR DISTURBANCE (BOTH LOTS & ROADWAYS) - 5.26 ACRES
- TOTAL ROADWAY - 900 L.F. TOTAL
- CONSTRUCTION OF17 UNITS

REVISIONS

REV	DATE	COMMENT	BY
1	11/30/16	MULTIPLE REVISIONS	RMG
2	12/19/16	MULTIPLE REVISIONS	RMG
3	1/31/17	MULTIPLE REVISIONS	RMG
4	5/10/17	MULTIPLE REVISIONS	RMG
5	7/11/17	MULTIPLE REVISIONS	RMG

COMMONWEALTH OF MASSACHUSETTS JAMES B. KALLOCH No. 24532 REGISTERED PROFESSIONAL ENGINEER

James B. Kalloch - PE No.24532 7/11/17

EROSION CONTROL NOTES

1. THOSE AREAS UNDERGOING ACTUAL CONSTRUCTION WILL BE LEFT IN AN UNTREATED OR UN VEGETATED CONDITION FOR A MINIMUM TIME. AREAS SHALL BE PERMANENTLY STABILIZED WITHIN 15 DAYS OF FINAL GRADING AND TEMPORARILY STABILIZED WITHIN 30 DAYS OF INITIAL DISTURBANCE OF THE SOIL. IF THE DISTURBANCE IS WITHIN 100 FEET OF A STREAM OR POND, THE AREA SHALL BE STABILIZED WITHIN 7 DAYS OR PRIOR TO ANY STORM EVENT (THIS WOULD INCLUDE WETLANDS).
2. SEDIMENT BARRIERS (SILT FENCE, HAY BARRIERS, ETC.) SHOULD BE INSTALLED PRIOR TO ANY SOIL DISTURBANCE OF THE CONTRIBUTING DRAINAGE AREA ABOVE THEM. MULCH NETTING SHALL BE USED TO ANCHOR MULCH IN ALL AREAS WITH SLOPES GREATER THAN 15% AFTER OCTOBER 1ST THE SAME APPLIES FOR ALL SLOPES GREATER THAN 8%.
3. ALL EROSION CONTROL STRUCTURES WILL BE INSPECTED, REPLACED AND/OR REPAIRED EVERY 7 DAYS AND IMMEDIATELY FOLLOWING ANY SIGNIFICANT RAINFALL OR SNOW MELT OR WHEN NO LONGER SERVICEABLE DUE TO SEDIMENT ACCUMULATION OR DECOMPOSURE. SEDIMENT DEPOSITS SHOULD BE REMOVED AFTER EACH STORM EVENT. THEY MUST BE REMOVED WHEN DEPOSITS REACH APPROXIMATELY ONE HALF THE HEIGHT OF THE BARRIER. SEDIMENT CONTROL DEVICES SHALL REMAIN IN PLACE AND BE MAINTAINED BY THE CONTRACTOR UNTIL AREAS UP-SLOPE ARE STABILIZED.
4. THE AREA OF DISTURBANCE SHALL BE KEPT TO A MINIMUM. DISTURBED AREAS REMAINING IDLE FOR MORE THAN 14 DAYS SHALL BE STABILIZED.
5. ALL TEMPORARY EROSION CONTROL MEASURES SHALL BE REMOVED ONCE THE SITE IS STABILIZED.
6. WETLANDS WILL BE PROTECTED WHAYBALES AND/OR SILT FENCE INSTALLED AT THE EDGE OF THE WETLAND OR THE BOUNDARY OF WETLAND DISTURBANCE.
7. ALL AREAS WITHIN 100 FEET OF A FLAGGED WETLAND OR STREAM SHALL FOLLOW APPROPRIATE EROSION CONTROL MEASURES PRIOR TO EACH STORM IF NOT BEING ACTIVELY WORKED.

THIS ENDORSEMENT MAKES NO DETERMINATION AS TO ZONING COMPLIANCE OR PLAN ACCURACY.

APPROVAL UNDER THE SUBDIVISION CONTROL LAW IS REQUIRED.

HOLDEN PLANNING BOARD:

Date: _____

Certificate of No Appeal

Decision of the Town of Holden Planning Board approving this plan was recorded in the office of the Holden Town Clerk on
Date: _____
And no notice of appeal there from received by the Holden Town Clerk during the 20 days following.

Town Clerk _____ Date _____

AMENDED DEFINITIVE PLAN GREENWOOD II

LOCATED ON
UNION STREET
HOLDEN, MASSACHUSETTS

SCALE: 1" = 150'

OWNED BY & PREPARED FOR

JACKSON WOODS INVESTMENTS, LLC.
87 MAIN STREET
RUTLAND, MA. 01543

New England Environmental Design, LLC

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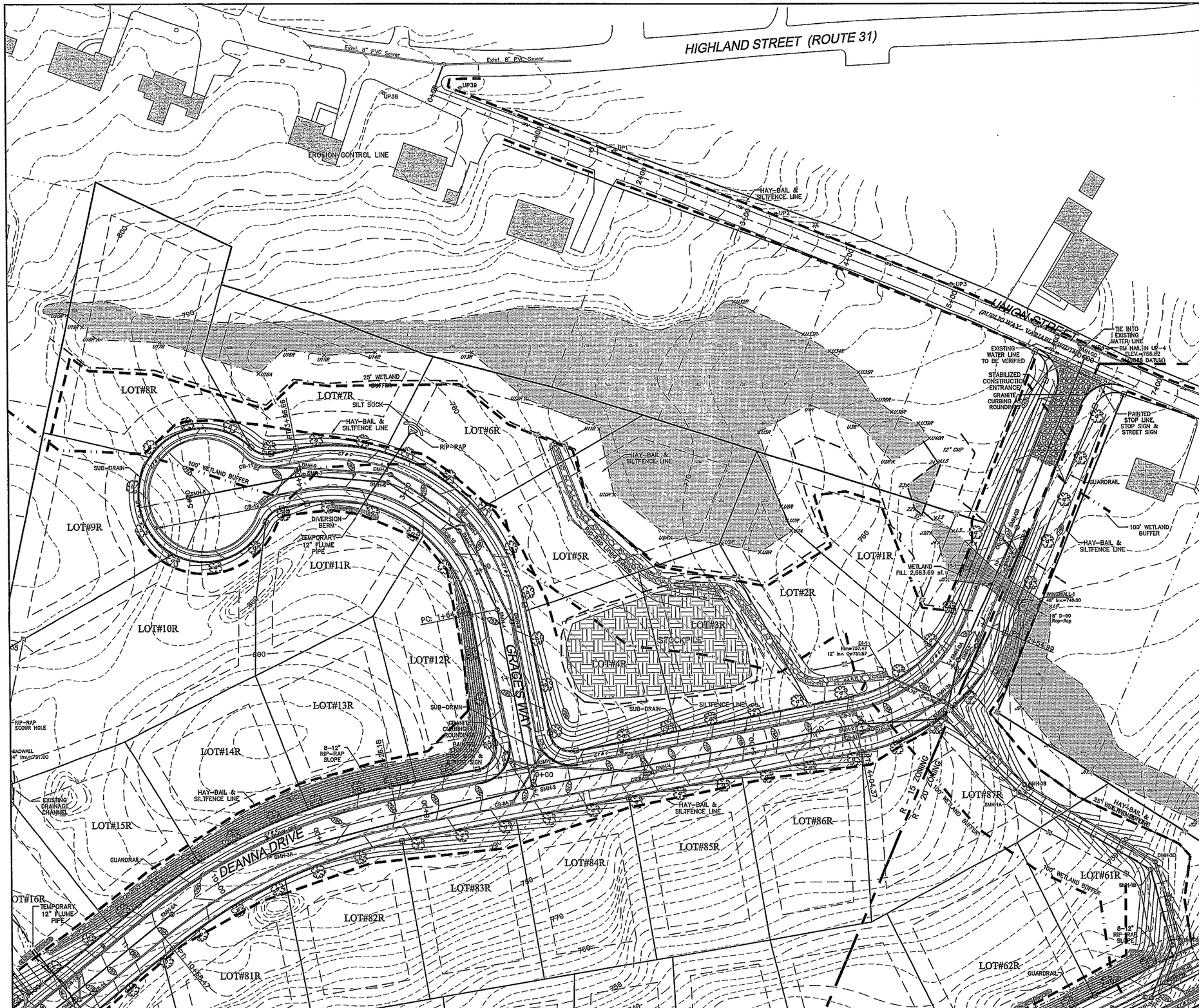
(508) 829-7222 Ph (508) 829-7522 Fax

Date: September 07, 2015	EC-02
Drawn By: RMG	
Checked By: JBK	
Job #: 907-13	Sheet 2 of 9



REVISIONS

REV	DATE	COMMENT	BY
1	12/19/16	MULTIPLE REVISIONS	RMG
2	1/31/17	MULTIPLE REVISIONS	RMG
3	5/10/17	MULTIPLE REVISIONS	RMG
4	7/11/17	MULTIPLE REVISIONS	RMG

COMMONWEALTH OF MASSACHUSETTS
JAMES B. KALLOCH
No. 24532
REGISTERED PROFESSIONAL ENGINEER

James B. Kalloch - PE No.24532

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HOLDEN PLANNING BOARD:

_____

_____

_____

_____

_____

Date: _____

Certificate of No Appeal

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Town Clerk Date

AMENDED DEFINITIVE PLAN GREENWOOD II

LOCATED ON
UNION STREET
HOLDEN, MASSACHUSETTS

SCALE: 1" = 40'

OWNED BY & PREPARED FOR

JACKSON WOODS INVESTMENTS, LLC.
87 MAIN STREET
RUTLAND, MA. 01543

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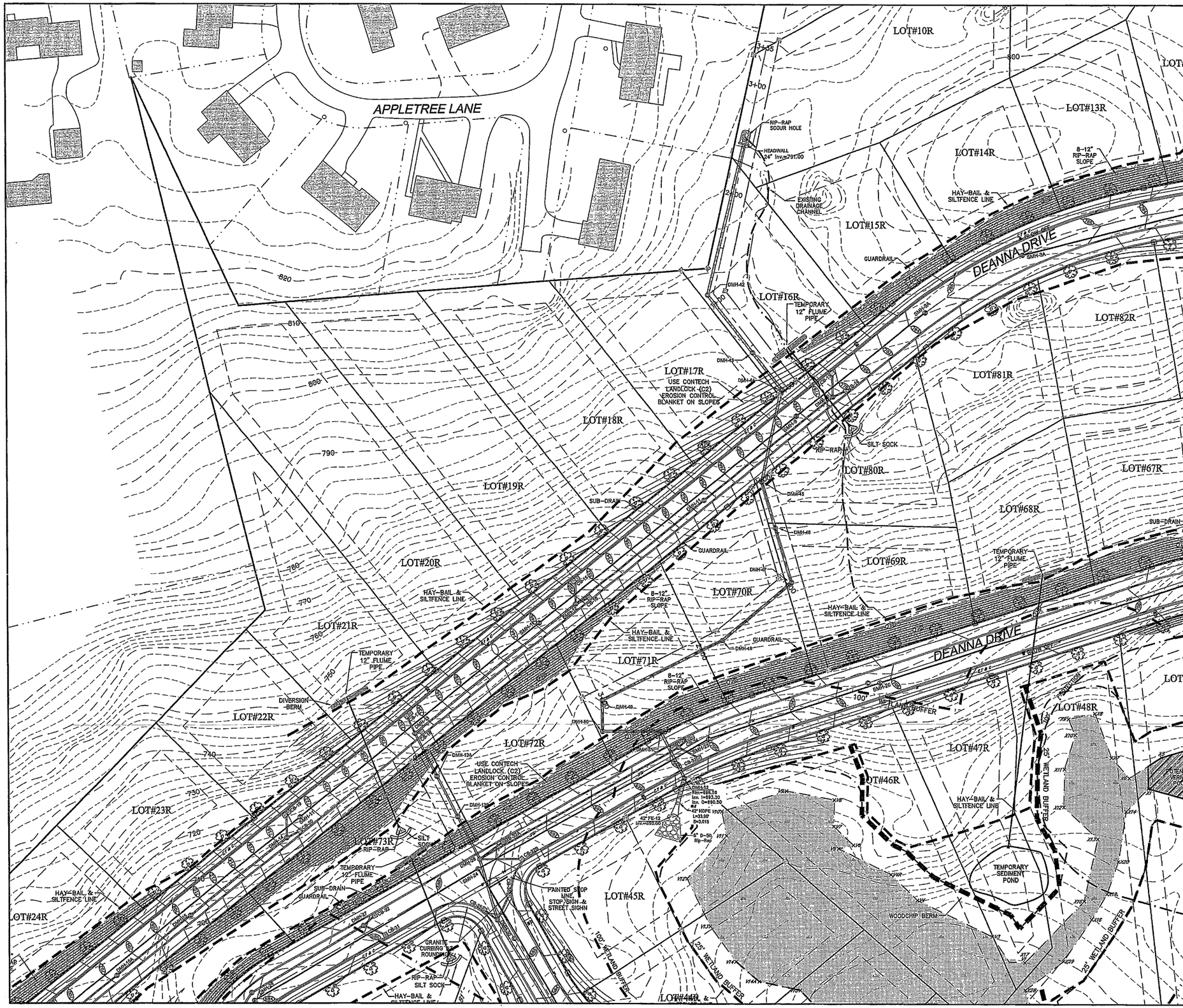
Date: September 07, 2015	EC-03
Drawn By: RMG	
Checked By: JBK	
Job #: 907-13	Sheet 3 of 9



REVISIONS

REV	DATE	COMMENT	BY
1	12/16/16	MULTIPLE REVISIONS	RMG
2	1/31/17	MULTIPLE REVISIONS	RMG
3	5/10/17	MULTIPLE REVISIONS	RMG
4	7/11/17	MULTIPLE REVISIONS	RMG

COMMONWEALTH OF MASSACHUSETTS
JAMES B. KALLOCH
No. 24532
REGISTERED PROFESSIONAL ENGINEER

James B. Kalloch - PE No.24532

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HOLDEN PLANNING BOARD:

Date: _____

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Town Clerk _____ Date _____

AMENDED DEFINITIVE PLAN GREENWOOD II

LOCATED ON
UNION STREET
HOLDEN, MASSACHUSETTS

SCALE: 1" = 40'

OWNED BY & PREPARED FOR

JACKSON WOODS INVESTMENTS, LLC.
87 MAIN STREET
RUTLAND, MA. 01543

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Date: September 07, 2015	EC-04
Drawn By: RMG	
Checked By: JBK	
Job #: 907-13	Sheet 4 of 9

REVISIONS

REV	DATE	COMMENT	BY
1	12/10/16	MULTIPLE REVISIONS	RMG
2	1/31/17	MULTIPLE REVISIONS	RMG
3	5/10/17	MULTIPLE REVISIONS	RMG
4	7/11/17	MULTIPLE REVISIONS	RMG

COMMONWEALTH OF MASSACHUSETTS JAMES B. KALLOCH No. 24532 REGISTERED PROFESSIONAL ENGINEER

James B. Kalloch - PE No.24532

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Town Clerk _____ Date _____

AMENDED DEFINITIVE PLAN GREENWOOD II

LOCATED ON
UNION STREET
HOLDEN, MASSACHUSETTS

SCALE: 1" = 40'

OWNED BY & PREPARED FOR

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New England Environmental Design, LLC

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Date: September 07, 2015	EC-05
Drawn By: RMG	
Checked By: JBK	
Job #: 907-13	Sheet 5 of 9

REVISIONS

REV	DATE	COMMENT	BY
1	1/31/17	MULTIPLE REVISIONS	RMG
2	5/10/17	MULTIPLE REVISIONS	RMG
3	7/11/17	MULTIPLE REVISIONS	RMG
4	9/08/17	MULTIPLE REVISIONS	RMG

COMMONWEALTH OF MASSACHUSETTS
JAMES B. KALLOCH
No. 24532
REGISTERED PROFESSIONAL ENGINEER

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3. ALL EROSION CONTROL STRUCTURES WILL BE INSPECTED, REPLACED AND/OR REPAIRED EVERY 7 DAYS AND IMMEDIATELY FOLLOWING ANY SIGNIFICANT RAINFALL OR SNOW MELT OR WHEN NO LONGER SERVICEABLE DUE TO SEDIMENT ACCUMULATION OR DECOMPOSURE. SEDIMENT DEPOSITS SHOULD BE REMOVED AFTER EACH STORM EVENT. THEY MUST BE REMOVED WHEN DEPOSITS REACH APPROXIMATELY ONE HALF THE HEIGHT OF THE BARRIER. SEDIMENT CONTROL DEVICES SHALL REMAIN IN PLACE AND BE MAINTAINED BY THE CONTRACTOR UNTIL AREAS UP-SLOPE ARE STABILIZED.
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AMENDED DEFINITIVE PLAN GREENWOOD II

LOCATED ON
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HOLDEN, MASSACHUSETTS

SCALE: 1" = 40'

OWNED BY & PREPARED FOR

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Date: September 07, 2015	EC-06
Drawn By: RMG	
Checked By: JBK	
Job #: 907-13	Sheet 6 of 9

REVISIONS

REV	DATE	COMMENT	BY
1	12/19/16	MULTIPLE REVISIONS	RMG
2	1/31/17	MULTIPLE REVISIONS	RMG
3	5/10/17	MULTIPLE REVISIONS	RMG
4	7/11/17	MULTIPLE REVISIONS	RMG

COMMONWEALTH OF MASSACHUSETTS
JAMES B. KALLOCH
No. 24532
REGISTERED PROFESSIONAL ENGINEER

James B. Kalloch - PE No.24532

EROSION CONTROL NOTES

1. THOSE AREAS UNDERGOING ACTUAL CONSTRUCTION WILL BE LEFT IN AN UNTREATED OR UN VEGETATED CONDITION FOR A MINIMUM TIME. AREAS SHALL BE PERMANENTLY STABILIZED WITHIN 14 DAYS OF FINAL GRADING AND TEMPORARILY STABILIZED WITHIN 30 DAYS OF INITIAL DISTURBANCE OF THE SOIL. IF THE DISTURBANCE IS WITHIN 100 FEET OF A STREAM OR POND, THE AREA SHALL BE STABILIZED WITHIN 7 DAYS OR PRIOR TO ANY STORM EVENT (THIS WOULD INCLUDE WETLANDS).
2. SEDIMENT BARRIERS (SILT FENCE, HAY BARRIERS, ETC.) SHOULD BE INSTALLED PRIOR TO ANY SOIL DISTURBANCE OF THE CONTRIBUTING DRAINAGE AREA ABOVE THEM. MULCH NETTING SHALL BE USED TO ANCHOR MULCH IN ALL AREAS WITH SLOPES GREATER THAN 15% AFTER OCTOBER 1ST THE SAME APPLIES FOR ALL SLOPES GREATER THAN 8%.
3. ALL EROSION CONTROL STRUCTURES WILL BE INSPECTED, REPLACED AND/OR REPAIRED EVERY 7 DAYS AND IMMEDIATELY FOLLOWING ANY SIGNIFICANT RAINFALL OR KNOW MELT OR WHEN NO LONGER SERVICEABLE DUE TO SEDIMENT ACCUMULATION OR DECOMPOSURE. SEDIMENT DEPOSITS SHOULD BE REMOVED AFTER EACH STORM EVENT. THEY MUST BE REMOVED WHEN DEPOSITS REACH APPROXIMATELY ONE HALF THE HEIGHT OF THE BARRIER. SEDIMENT CONTROL DEVICES SHALL REMAIN IN PLACE AND BE MAINTAINED BY THE CONTRACTOR UNTIL AREAS UP-SLOPE ARE STABILIZED.
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7. ALL AREAS WITHIN 100 FEET OF A FLAGGED WETLAND OR STREAM SHALL FOLLOW APPROPRIATE EROSION CONTROL MEASURES PRIOR TO EACH STORM IF NOT BEING ACTIVELY WORKED.

THIS ENDORSEMENT MAKES NO DETERMINATION AS TO ZONING COMPLIANCE OR PLAN ACCURACY.

APPROVAL UNDER THE SUBDIVISION CONTROL LAW IS REQUIRED.

HOLDEN PLANNING BOARD:

Date: _____

Certificate of No Appeal

Decision of the Town of Holden Planning Board approving this plan was recorded in the office of the Holden Town Clerk on

Date: _____

And no notice of appeal there from received by the Holden Town Clerk during the 20 days following.

Town Clerk _____ Date _____

AMENDED DEFINITIVE PLAN GREENWOOD II

LOCATED ON
UNION STREET
HOLDEN, MASSACHUSETTS

SCALE: 1" = 40'

OWNED BY & PREPARED FOR

JACKSON WOODS INVESTMENTS, LLC.
87 MAIN STREET
RUTLAND, MA. 01543

New England Environmental Design, LLC

Environmental Consultants ■ Civil Engineering Consultants
Land Surveying Consultants
P.O. Box 376 Rutland, MA 01543
(508) 829-7222 Ph (508) 829-7522 Fax

Date: September 07, 2015	EC-07
Drawn By: RMG	
Checked By: JBK	
Job #: 907-13	Sheet 7 of 9

REVISIONS

REV	DATE	COMMENT	BY
1	12/19/16	MULTIPLE REVISIONS	RMG
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COMMONWEALTH OF MASSACHUSETTS
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No. 24532
REGISTERED PROFESSIONAL ENGINEER

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LOCATED ON
UNION STREET
HOLDEN, MASSACHUSETTS

SCALE: 1" = 40'

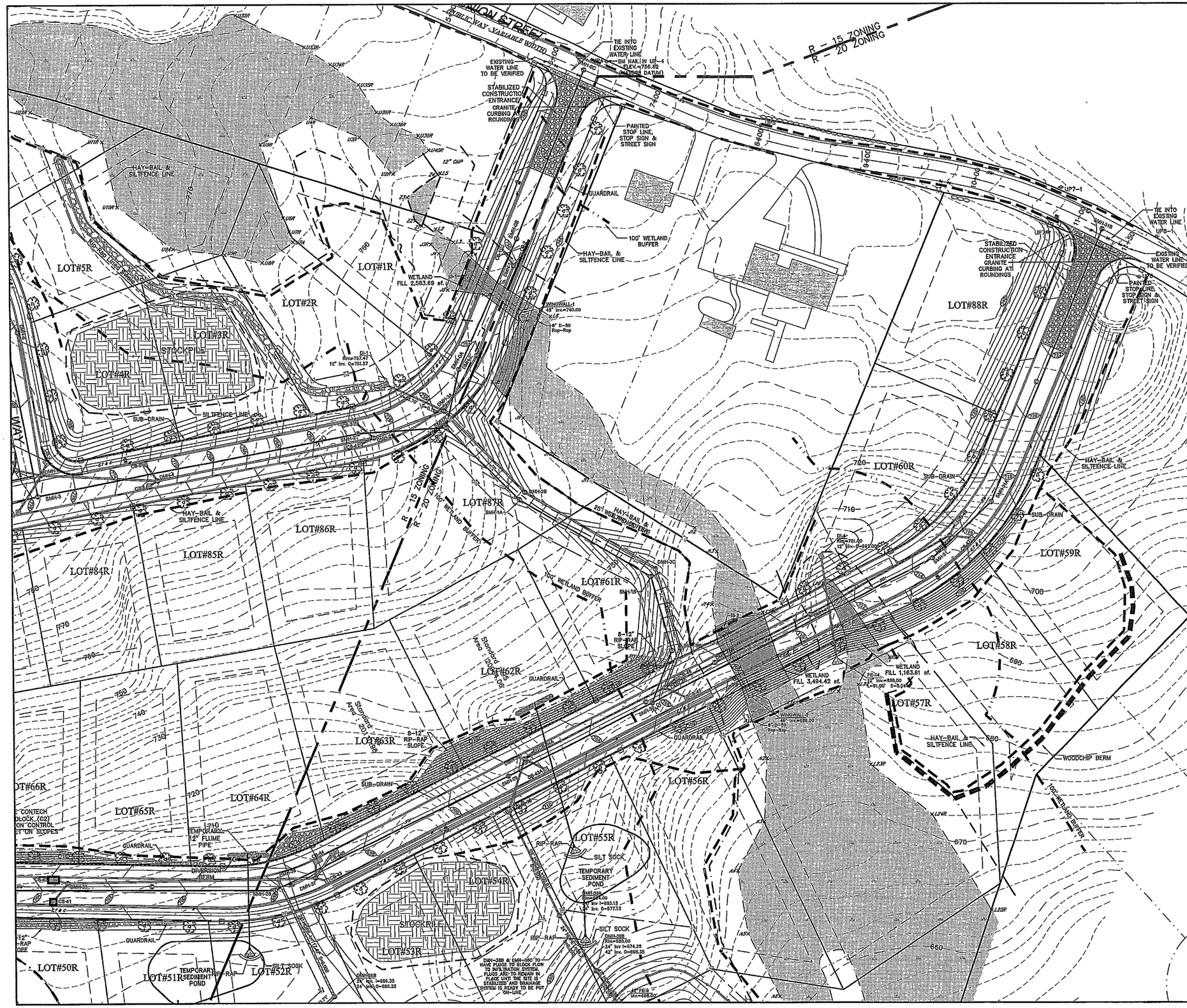
OWNED BY & PREPARED FOR

JACKSON WOODS INVESTMENTS, LLC.
87 MAIN STREET
RUTLAND, MA. 01543

New England Environmental Design, LLC

Environmental Consultants ■ Civil Engineering Consultants
Land Surveying Consultants
P.O. Box 376 Rutland, MA 01543
(508) 829-7222 Ph (508) 829-7522 Fax

Date: September 07, 2015	EC-08
Drawn By: RMG	
Checked By: JBK	
Job #: 907-13	Sheet 8 of 9



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COMMONWEALTH OF MASSACHUSETTS
JAMES B. KALLOCH
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REGISTERED PROFESSIONAL ENGINEER

James B. Kalloch 7/11/17
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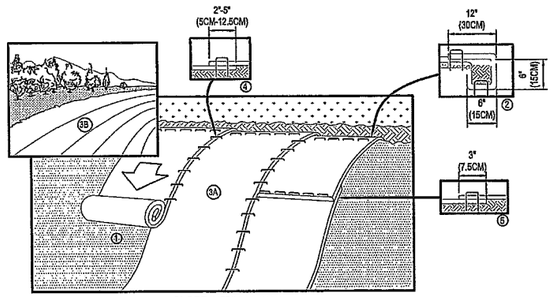
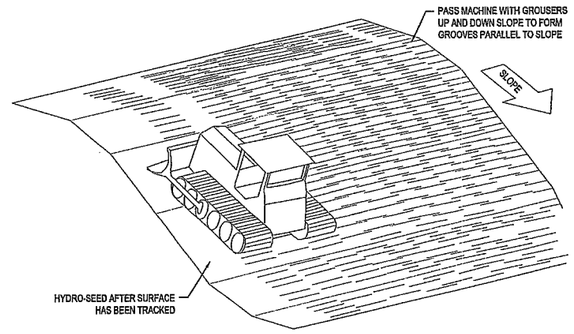
Drawn By: RMG	
Checked By: JBK	
Job #: 907-13	Sheet 9 of 9



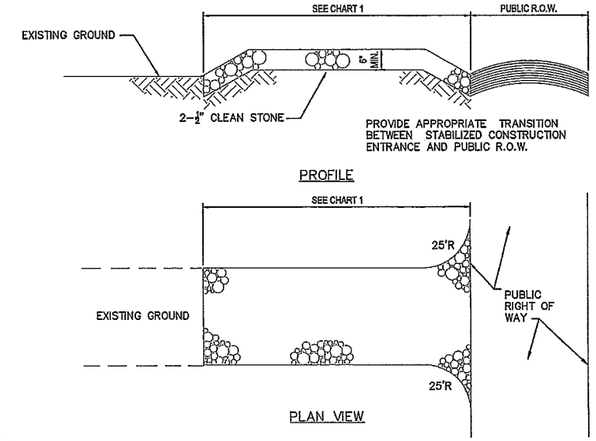
SLOPE INSTALLATION

1. PREPARE SOIL BEFORE INSTALLING BLANKETS, INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED. NOTE: WHEN USING CELL-O-SEED DO NOT SEED PREPARED AREA. CELL-O-SEED MUST BE INSTALLED WITH PAPER SIDE DOWN.
2. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE BLANKET IN A 6" (15CM) DEEP X 6" (15CM) WIDE TRENCH WITH APPROXIMATELY 12" (30CM) OF BLANKET EXTENDED BEYOND THE UP-SLOPE PORTION OF THE TRENCH. ANCHOR THE BLANKET WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" (30CM) APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" (30CM) PORTION OF BLANKET BACK OVER SEED AND COMPACTED SOIL. SECURE BLANKET OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" (30CM) APART ACROSS THE WIDTH OF THE BLANKET.
3. ROLL THE BLANKETS (A.) DOWN OR (B.) HORIZONTALLY ACROSS THE SLOPE. BLANKETS WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL BLANKETS MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE. WHEN USING OPTIONAL DOT SYSTEM, STAPLES/STAKES SHOULD BE PLACED THROUGH EACH OF THE COLORED DOTS CORRESPONDING TO THE APPROPRIATE STAPLE PATTERN.
4. THE EDGES OF PARALLEL BLANKETS MUST BE STAPLED WITH APPROXIMATELY 2"-5" (5CM-12.5CM) OVERLAP DEPENDING ON BLANKET TYPE. TO ENSURE PROPER SEAM ALIGNMENT, PLACE THE EDGE OF THE OVERLAPPING BLANKET (BLANKET BEING INSTALLED ON TOP) EVEN WITH THE COLORED SEAM STITCH ON THE PREVIOUSLY INSTALLED BLANKET.
5. CONSECUTIVE BLANKETS SPLICED DOWN THE SLOPE MUST BE PLACED END OVER END (SHINGLE STYLE) WITH AN APPROXIMATE 3" (7.5CM) OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12" (30CM) APART ACROSS ENTIRE BLANKET WIDTH.

Erosion Control Blanket
(NOT TO SCALE)



Slope Tracking Detail
(NOT TO SCALE)

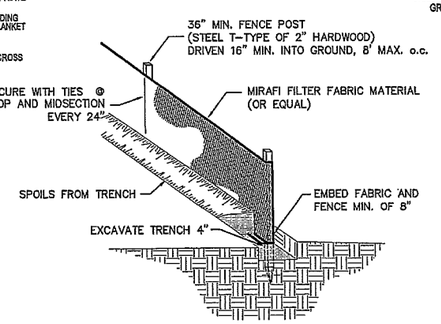


PERCENT SLOPE OF ROADWAY	LENGTH OF STONE REQUIRED	
	COARSE GRAINED SOILS	FINE GRAINED SOILS
0 TO 2%	50 FT	100 FT
2% TO 5%	100 FT	200FT
>5%	ENTIRE ENTRANCE STABILIZED WITH FABC BASE COURSE (1)	

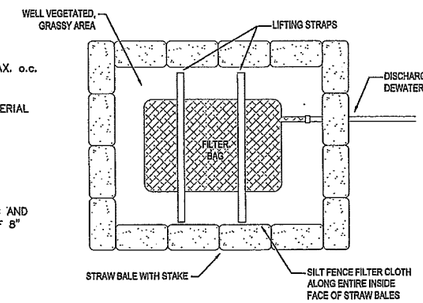
(1) AS PRESCRIBED BY LOCAL ORDINANCE OR OTHER GOVERNING AUTHORITY.

CHART 1

Stabalized Construction Entrance
(NOT TO SCALE)

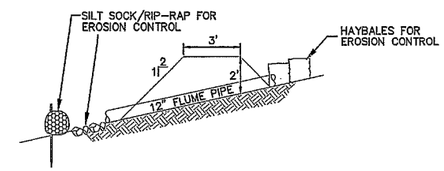


Silt Fence Detail
(NOT TO SCALE)

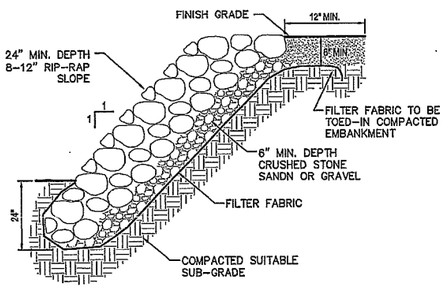


NOTE: ANY DEWATERING DISCHARGE LOCATIONS WITHIN THE 100' BUFFER ZONE ARE TO BE REVIEWED WITH THE CONSERVATION COMMISION PRIOR TO OPERATION.

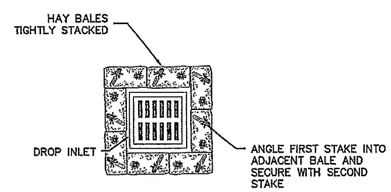
Dewatering Pit
(NOT TO SCALE)



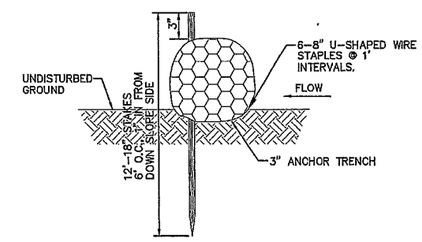
Diversion Berm Detail
(NOT TO SCALE)



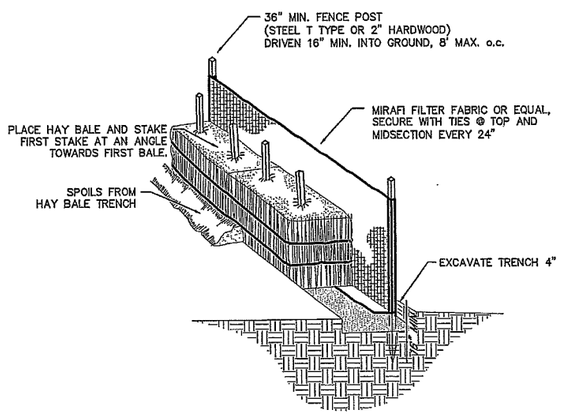
Rip-Rap Slope Protection
(NOT TO SCALE)



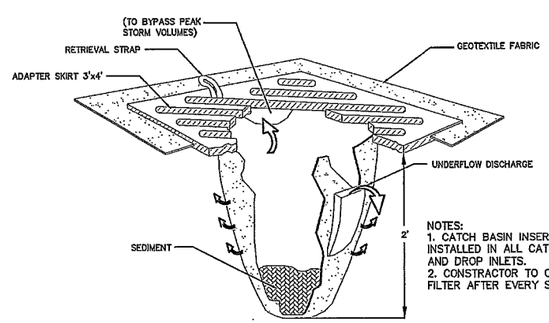
Hay Bale Barrier at Drop Inlet
(NOT TO SCALE)



Silt Sock Detail
(NOT TO SCALE)

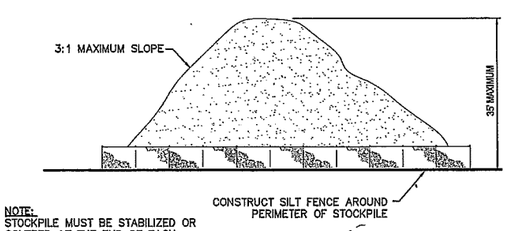


Erosion Control Detail
(NOT TO SCALE)



NOTES:
1. CATCH BASIN INSERT IS TO BE INSTALLED IN ALL CATCH BASINS AND DROP INLETS.
2. CONSTRACTOR TO CLEAN INLET FILTER AFTER EVERY STORM.

Inlet Filter Detail
(NOT TO SCALE)



NOTE:
STOCKPILE MUST BE STABILIZED OR COVERED AT THE END OF EACH WORKDAY.

Temporary Stockpile Detail
(NOT TO SCALE)

REVISIONS

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1	1/31/17	MULTIPLE REVISIONS	RMG
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811 DigSafe MA-ME-NH-RI-VT
CONTRACTOR TO VERIFY ACTUAL LOCATION OF EXISTING UTILITY SERVICES IN THE FIELD PRIOR TO CONSTRUCTION.

COMMONWEALTH OF MASSACHUSETTS JAMES B. KALLOCH No. 24532 REGISTERED PROFESSIONAL ENGINEER

James B. Kalloch - PE No.24532

THIS SHEET IS RESERVED FOR CONSTRUCTION DETAILS FOR INSTRUCTION PURPOSES ONLY DO NOT SCALE DRAWINGS ON THIS SHEET

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LOCATED ON
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SCALE: AS NOTED

OWNED BY & PREPARED FOR

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Date: September 07, 2015
Drawn By: RMG
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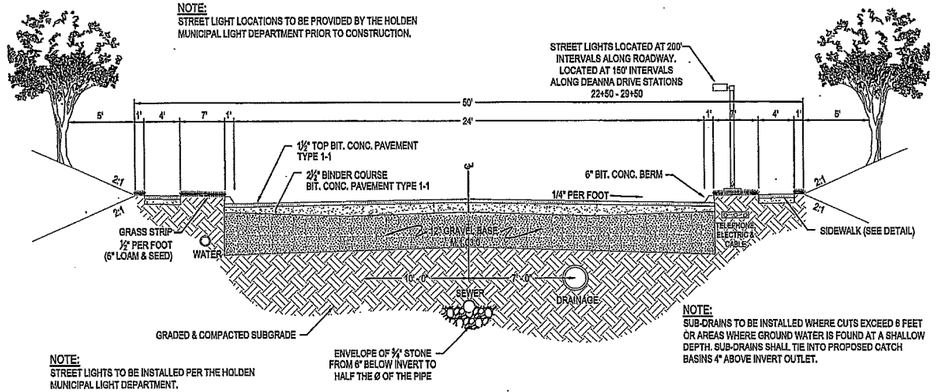
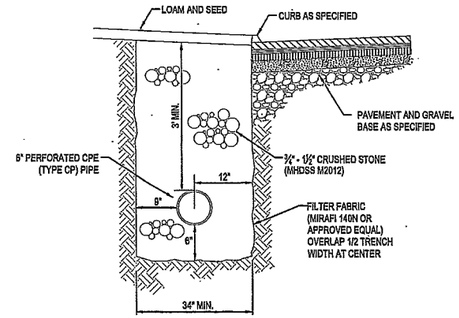
Job #: 907-13

D-01

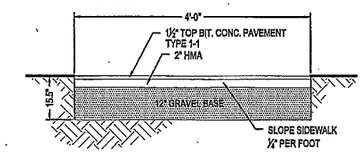


Typical Roadway Cross Section
(NOT TO SCALE)

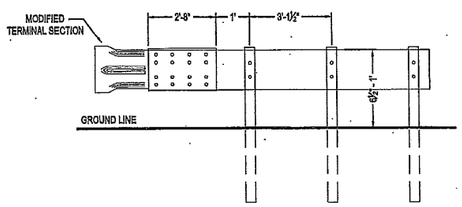


Sub-Drain Detail
(NOT TO SCALE)

NOTE:
SIDEWALKS SHALL CONFORM TO ADA, MAAB, MA DOT AND HOLDEN DPW STANDARDS.



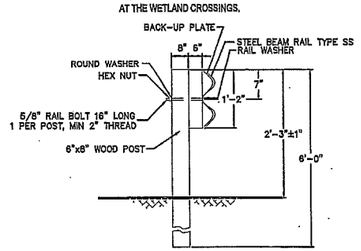
Bituminous Concrete Walk Detail
(NOT TO SCALE)



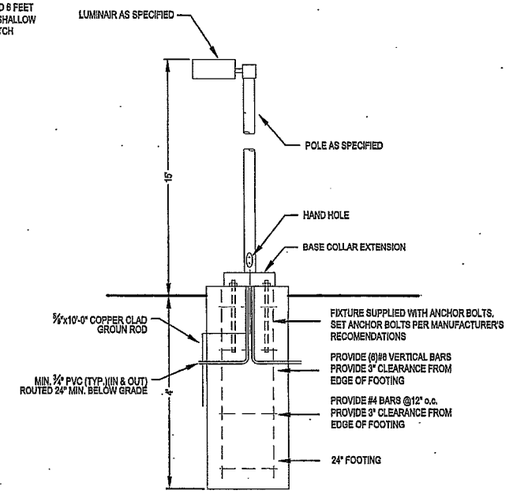
Steel Thrie Beam
@ End of Guard Rail
(NOT TO SCALE)

NOTES:
1. ALL NUTS, BOLTS AND WASHERS TO BE GALVANIZED.
2. ALL SPLICES TO BE MADE AT POSTS.
3. BACK-UP PLATE IS PLACED BEHIND RAIL ELEMENTS AT INTERMEDIATE POSTS i.e. NON SPLICE ELEMENTS.

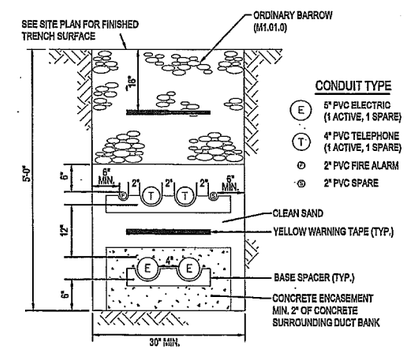
NOTE:
GUARD RAILS ARE TO BE INSTALLED A MIN. OF 24" FROM THE TOP OF THE SLOPE AND A MIN. OF 24" FROM FACE OF CURB AT THE WETLAND CROSSINGS.



Steel Beam Guard Rail
With Wood Post
(NOT TO SCALE)

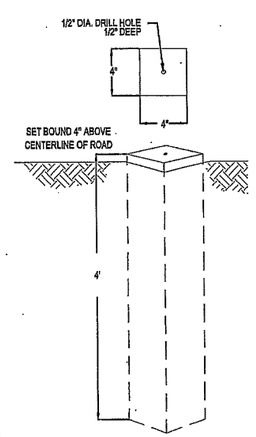


Exterior Lighting Detail
(NOT TO SCALE)

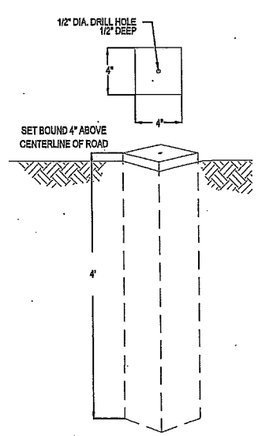


NOTE:
ALL TRENCH CONDUITS SHALL BE SCHEDULE 40 PVC, UNLESS OTHERWISE NOTED.

Common Trench Detail
Elec./Telephone/Fire Alarm/Cable
(NOT TO SCALE)

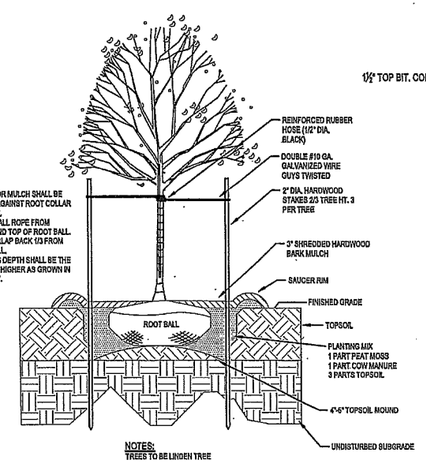


Typical Concrete Bound
(NOT TO SCALE)



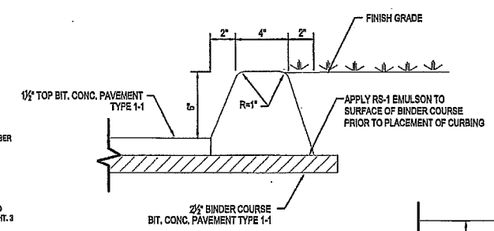
Typical Granite Bound
(NOT TO SCALE)

NOTES:
1. NO SOIL OR MULCH SHALL BE PLACED AGAINST ROOT COLLAR OF PLANT.
2. REMOVE ALL ROPE FROM TRUNK AND TOP OF ROOT BALL. FOLD BURLAP BACK 1/3 FROM ROOT BALL.
3. PLANTING DEPTH SHALL BE THE SAME OR HIGHER AS GROWN IN NURSERY.

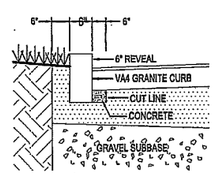


NOTES:
TREES TO BE LINDEN TREE

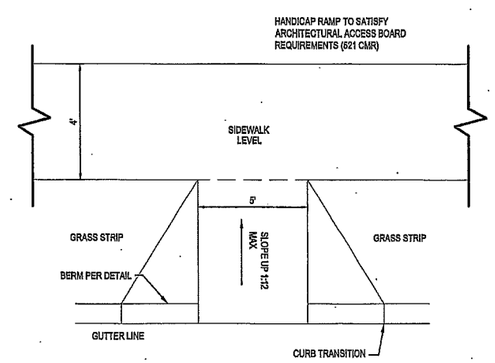
Tree Planting Detail
(NOT TO SCALE)



Bituminous Concrete Berm
(NOT TO SCALE)



Vertical Curb Detail
(NOT TO SCALE)



Accessible Ramp Detail
(NOT TO SCALE)

7/11/17

REVISIONS

REV	DATE	COMMENT	BY
1	5/10/17	MULTIPLE REVISIONS	RMG
2	7/11/17	MULTIPLE REVISIONS	RMG
3	9/07/17	MULTIPLE REVISIONS	RMG
4	9/19/17	MULTIPLE REVISIONS	RMG

811 DigSafe
CONTRACTOR TO VERIFY ACTUAL LOCATION OF EXISTING UTILITY SERVICES IN THE FIELD PRIOR TO CONSTRUCTION.

COMMONWEALTH OF MASSACHUSETTS JAMES B. KALLOCH No. 24532 REGISTERED PROFESSIONAL ENGINEER

James B. Kalloch - PE No.24532

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HOLDEN PLANNING BOARD:

Date:

Certificate of No Appeal
Decision of the Town of Holden Planning Board approving this plan was recorded in the office of the Holden Town Clerk on
Date:
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Town Clerk Date

AMENDED DEFINITIVE PLAN GREENWOOD II

LOCATED ON
UNION STREET
HOLDEN, MASSACHUSETTS

SCALE: AS NOTED

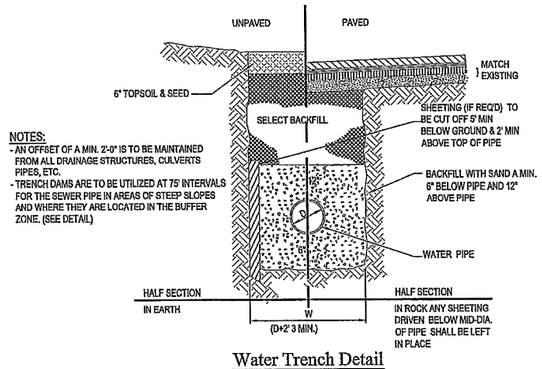
OWNED BY & PREPARED FOR

JACKSON WOODS INVESTMENTS, LLC.
87 MAIN STREET
RUTLAND, MA. 01543

New England Environmental Design, LLC
Environmental Consultants ■ Civil Engineering Consultants
Land Surveying Consultants
P.O. Box 376 Rutland, MA 01543
(508) 829-7222 Ph (508) 829-7522 Fax

Date: September 07, 2015
Drawn By: RMG
Checked By: JBK
Job #: 907-13

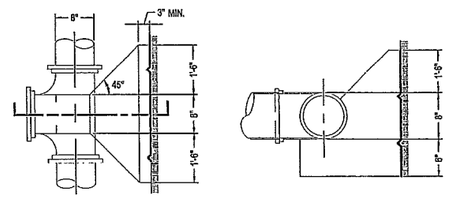
D-02



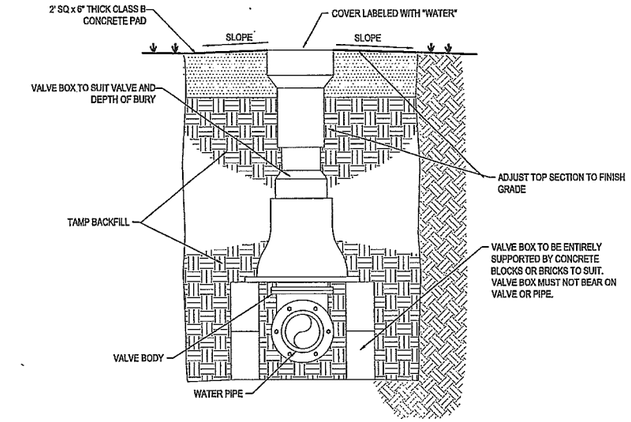
NOTES:
- AN OFFSET OF A MIN. 2'-0" IS TO BE MAINTAINED FROM ALL DRAINAGE STRUCTURES, CULVERTS PIPES, ETC.
- TRENCH DAMS ARE TO BE UTILIZED AT 75' INTERVALS FOR THE SEWER PIPE IN AREAS OF STEEP SLOPES AND WHERE THEY ARE LOCATED IN THE BUFFER ZONE. (SEE DETAIL)

Water Trench Detail
(NOT TO SCALE)

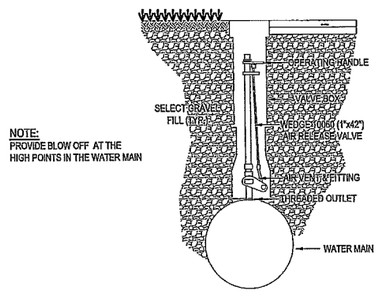
MINIMUM VERTICAL-PLANE BEARING AREAS FOR WATER MAIN FITTINGS (SF)			
SIZE OF MAIN (IN)	22 1/2" BEND	45" BEND	TEES & PLUGS
8" OR LESS	8	8	10
10" & 12"	13	22	16



Thrust Block Detail
(NOT TO SCALE)

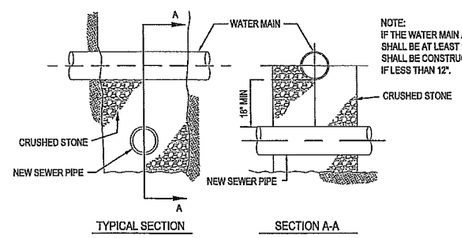


Gate Valve Detail
(NOT TO SCALE)



NOTE:
PROVIDE BLOW OFF AT THE HIGH POINTS IN THE WATER MAIN

Blow Off Assemby
(NOT TO SCALE)



NOTE:
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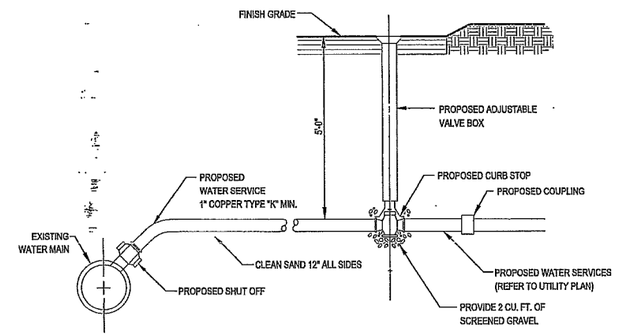
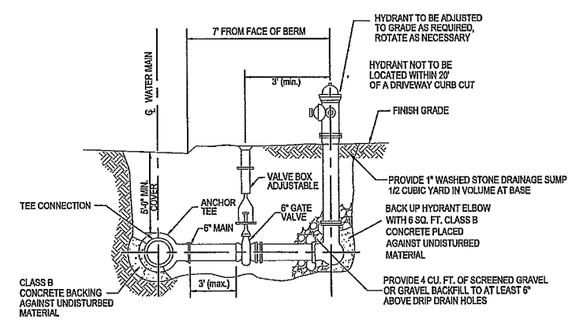
Utility Crossing Detail
(NOT TO SCALE)



Water Service Connection Detail
(NOT TO SCALE)



NOTE:
1. HYDRANT AND GATE VALVE TO BE RODDED TO ANCHOR TEE.
2. SEE THRUST BLOCK DETAIL FOR THE AREA OF CONCRETE REQUIRED

Typicl Hydrant & Valve
(NOT TO SCALE)

Holden Water Main Specifications:
Water mains shall be ductile iron pipe to be a minimum of 8 inches in diameter .

Water mains shall be laid to provide a minimum cover of five (5) feet from the finished grade, and shall not be deeper than eight (8) feet. All piping shall be Class 52 Ductile-Iron pipe designed for on internal working pressure. All fittings and hydrants shall have properly designed concrete thrust blocks installed behind them.

Gate valves shall be installed on each outlet of all tees and crosses, every 500 feet of main, on hydrant branches, and at dead ends. Gate valves shall be resilient wedge, open left meeting all AWWA standards .

Hydrants shall be located every 500 feet on one side of each street unless a greater distance is approved , and shall have a one (1) inch washed stone drainage sump one-half (1/2) cubic yard in volume at its base.

Gate valves, road boxes and hydrants shall be equal in quality to those presently being purchased by the Town's Water Department.

Water service shall be minimum 1" copper type K at a burial depth of six (5) feet. Clean sand shall fully encompass the copper tubing (12" all sides) .

Upon completion of the water main construction and prior to putting into service a pressure and leakage test will be made. Any defects found shall be corrected immediately. Once a successful test has been run, the lines shall be chlorinated before they are put into service. The developer shall be responsible for providing all necessary equipment and labor to conduct the tests and chlorination which must be witnessed by a representative of the Department of Public Works .

Prior to the construction of buildings in a subdivision, or in any phase of a subdivision approved by the Planning Board, the water supply and hydrants for fire protection shall be installed and maintained by the Applicant in a manner acceptable to the Fire Chief and the Department of Public Works until acceptance of the water lines by the Town of Holden

Town of Holden List of Approved Materials for Water System Infrastructure January 2006:

Castings : All castings and fitting shall be manufactured in North American as required by Holden DPW.

Water Mains: shall be ductile iron centrifugally cast with push-on joints conforming to AWWA/ANSI C151. Pipe shall be Class 52,double cement lined and bituminous coated conforming to AWWA/ANSI C104. No Manufacturer Specified.

Gate Valve: (12-inch diameter or less): Shall be 200 psi working pressure, non-rising stem, "O" ring, open left, mechanical joint, two -inch ductile iron operating nut with stainless steel bolt, resilient seated (resilient wedge) gate valve conforming to ANSI/AWWA C509 - Kennedy, Clow or Mueller. Valves shall be epoxy coated and supplied with mechanical joint accessories , high strength alloy steel bolts and heavy hexagon nuts conforming to ANSI/ AWWA C 111.

Gate Valve Boxes: shall be cast iron, two piece, sliding type with a non-flange top section, no inside stops, and an outside shaft diameter of six inches. Bottom section shall be belled base. Length of top section shall be minimum of 24 inches. Middle and bottom section length as needed. Boxes shall have the word "WATER" cast into cover. Clow and Ford .

Ductile Iron Fittings: Pipe fittings shall have mechanical joint ends conforming to ANSI/AWWA C 1/A21 .11, double cement lining and bituminous coating conforming to ANSI/AWWA C104.A21.4. fittings shall be supplied with mechanical joint accessories unless specified others , with high strength low alloy steel bolts and heavy hexagon nuts conforming to ANSI/AWWA C111.A21 .11. Long body fittings shall be Class 350 ductile iron conforming to ANSI/AWWA C110/A21 .10. Compact body fittings shall be Class 350 ductile iron conforming to ANSI/AWWA C153/A21.53.

Hydrants: All Hydrants must be Eddy Model F-2640, open left, with break flange . Hydrants are to be factory painted yellow with reflective white on bonnet and cops with oil based paint.

Service Line from Main to Curb: Type K Copper (ASTM 888), minimum size 1".

Service Line from Curb to House: Type K Copper (ASTM 888) or plastic with minimum pressure rating of 200 psi.

Corporation: Ball valve type construction with inlet CC thread and compression pock joint on the outlet, heavy patterns , and conforming to AWWA/ANSI C800 - McDonald, Ford or approved equal. Inlet iron pipe threads are required for 1-1/2" and larger corporations . Brass shall hove minimum lead content ; Town may request lead content of any brass or copper materials .

Curb Stop: McDonald ball valve type construction with inlet compression and compression pack joint on the outlet, heavy patterns, and conforming to AWWNANSI *C800* - Brass shall have minimum lead content , Town may request lead content of any brass or copper materials.

Curb Box: Shall be Erie style with arch pattern, one-inch in diameter , constructed from SC #40 Block Steel, adjustable in length from five feet to six feet, and have 5/8"-diameter stainless steel rod 36-inches in length with heavy brass pins .
One-inch caps shall be extra heavy with brass pentagon plug and coarse "rope" thread to fit a one- inch Erie style box.
Two-inch caps shall be a #3 cover, cast iron with brass bushing and bras pentagon plug to fit a two- inch Erie style box.
All caps shall be constructed of magnetic material and have the word "WATER" cast into cover - Clow and Ford.

Meters: Badger Meter with Iron ERT purchased through the Town and installed by the Town for standard (5/8") size.

Non-standard larger meters installed by contractor.

Meter Setters: Meter setters shall have compression pack Joint connections on the inlet and outlet ends suitable for 3/4-inch copper tubing . Meter setters for one-inch meters shall have female iron pipe thread connections on the inlet and outlet ends. Two meter gaskets shall be supplied with each hom - No Manufacturer Specified.

REVISIONS

REV	DATE	COMMENT	BY
1	2/27/17	MULTIPLE REVISIONS	RMG
2	5/10/17	MULTIPLE REVISIONS	RMG
3	7/11/17	MULTIPLE REVISIONS	RMG
4	9/19/17	MULTIPLE REVISIONS	RMG

811 DigSafe MA-ME-NH-RI-VT
CONTRACTOR TO VERIFY ACTUAL LOCATION OF EXISTING UTILITY SERVICES IN THE FIELD PRIOR TO CONSTRUCTION.

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AMENDED DEFINITIVE PLAN GREENWOOD II

LOCATED ON
UNION STREET
HOLDEN, MASSACHUSETTS

SCALE: AS NOTED

OWNED BY & PREPARED FOR

JACKSON WOODS INVESTMENTS, LLC.
87 MAIN STREET
RUTLAND, MA. 01543

New England Environmental Design, LLC
Environmental Consultants ■ Civil Engineering Consultants
Land Surveying Consultants
P.O. Box 376 Rutland, MA 01543
(508) 829-7222 Ph (508) 829-7522 Fax

Date: September 07, 2015
Drawn By: RMG
Checked By: JBK
Job #: 907-13

D-03

Sheet 3 of 10

Holden Sewerage Specifications:

Sewer pipes and related equipment, such as manholes and connecting Y's shall be constructed in conformity with the specifications of the Town of Holden Public Works Department.

The installation of water and sewer pipes and related equipment shall not be backfilled until inspected by the proper authority.

Sewer mains shall be minimum 811 SDR 35 PVC laid to a m1n1mum slope of one-half (1/2) foot per 100 feet. All sewer laterals shall be 611 SOR 35 PVC laid at a minimum pitch of one-quarter (1 /4) inch per foot. All sewers, including house services, shall be laid in on envelope of three- quarter (3/4) inch washed gravel. Deflections in line or grade in excess of one-half (1/2) inch will be cause for rejection.

Line and grade shall be controlled by the use of laser instruments. All castings and fitting shall be manufactured in North America. All sewer manholes shall be vacuum tested in accordance with ASTM C1244.

EXFILTRATION/INFILTRATION, AIR TESTS AND TV INSPECTION

Time for Making Tests: After the pipe has been laid and backfilled, an infiltration, exfiltration or low pressure air test shall be made on each section of pipeline between manholes. When no groundwater exists at the time of the test, the pipeline shall be subjected to an exfiltration test or an air test. Testing shall be completed based upon DEP Requirements below.

TV Inspection: When the pipe lines pass an exfiltration/infiltration or air test, they shall be subject to a TV inspection performed under the supervision of the Engineer. A recording of the TV inspection shall be provided to the Town Engineer. Any sections found to be damaged or blocked shall be repaired to the satisfaction of the Town Engineer or retested

Minimum Standards for Watertight construction for Sewer Piping

Allowable infiltration or exfiltration should not exceed I OOgpd/inch-diam /mile of sewer. Leakage test shall be specified in the specification and may include water or low pressure air testing.
Watertight construction consists of the use of ductile iron, mechanical joint pipe, pre-stressed concrete cylinder pipe, and solvent welded joint PVC pipe and any combination of the above.
Pressure testing should be performed by the owner after completion of construction, prior to startup and after on year of natural settling in order to ensure the water-tightness of the affected collection systems, manholes and pump station wet wells.

Acceptable air testing procedures are presented in American Society of Testing and Material Standard C828-90T "Standard Test Method for Low-Pressure Air Test of Vitrified Clay Pipe". In Lieu of that Standard the following test procedure is acceptable:

1) Plug all openings in the section of sewer piping to be tested
2) Pressurize the system to be tested to an air pressure of 5 psi. Shut off the pressurized air source.
3) Allow the pressure to stabilize for a minim um of 5 minutes
4) Record the stabilized pressure in the test section. Record the test start time. The minimum test pressure is 4 psi. The minimum test time is 5 minutes. At the end of the pressure testing time period record the test pressure and the test termination time. If the pressure drop is greater than 2 psi during the duration of the test, the tested section has failed the test.

testes are failed, repairs must be made to the affected sewer pipe and retested.

INSPECTIONS WILL ONLY BE MADE DURING THE HOURS OF 8:00 AM TO 4:00 PM MONDAYS THROUGH THURSDAYS AND 8:00 AM TO NOON ON FRIDAYS EXCEPT HOLIDAYS. PLEASE NOTE: A minimum two (2) hour notification shall be given by the contractor for requested inspections.

The following is a list of requirements for house connections to the sanitary sewer lines:

1. A valid permit must be issued prior to the start of work to install a particular sewer connection. Lack of an approved permit may result in suspension or revocation of your drain-layers license.

2. . Proper notification to all required agencies must be made within required time periods. Notification to Dig-safe (888-344-7233) must be made 72 hours prior to the start of work. The Holden Water Department (508-210-5550) must be notified 48 hours prior to the start of work for information and location marking of water lines.

3. The contractor is responsible to comply with all applicable OSHA open trench safety requirements. It is not the Town's responsibility to inspect each site for compliance.

4. Each particular sewer shall be laid directly to the building sewered. Not more than one building can be connected with a particular sewer through the same pipe.

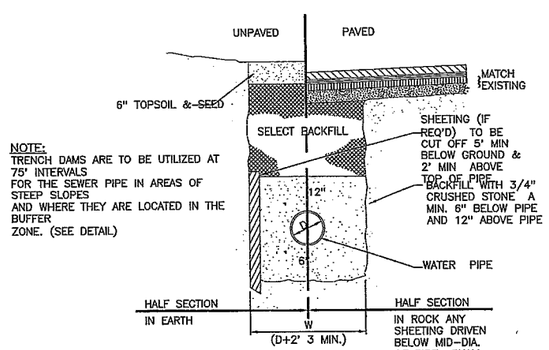
5. . Six inch (6") Schedule 35 PVC pipe as approved by the DPW Director will be used to make connections of all particular sewers to within five feet of the foundation wall of the building to be sewered. A four-inch (4") heavy cast iron pipe or equivalent PVC pipe (Schedule 40) shall be used through the foundation wall.

6. Minimum allowable slope is 2% or 1/4 inch per foot.

7. Cleanouts shall be provided every three (3) bends or 100 feet.

8. All pipes shall be laid with the bell end toward the outlet at the foundation (bell end uphill). Pipes shall not be reversed to eliminate fittings.

9. All joints shall be push on rubber type fittings. No glued PVC joints will be allowed outside the Foundation walls. The connection to be made from the six-inch (6") PVC pipe to the four-inch (4") heavy cast iron pipe shall be made with a rubber boot adapter. This adapter shall be of an approved type with stainless steel compression rings designed to create a water-tight seal.



NOTE:
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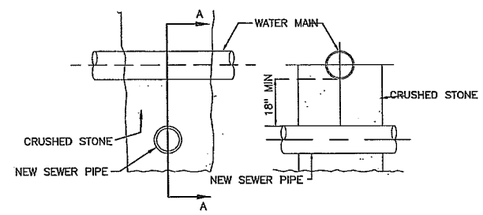
Sewer Trench Detail
(NOT TO SCALE)



TYPICAL SECTION SECTION A–A

NOTE:
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Utility Crossing Detail
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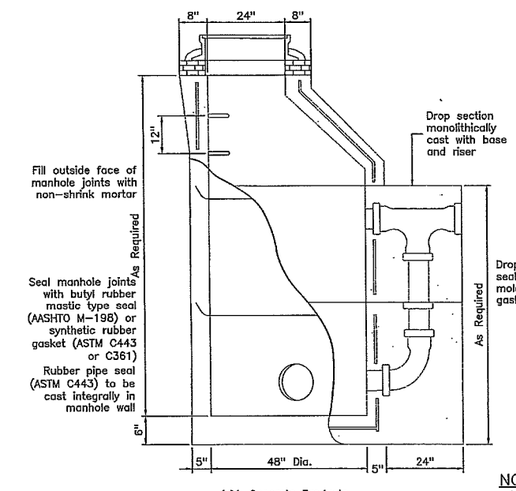
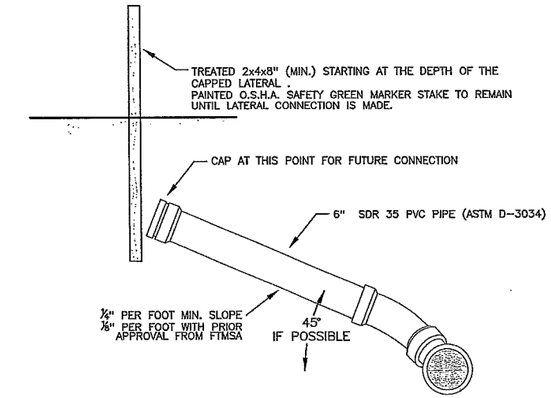
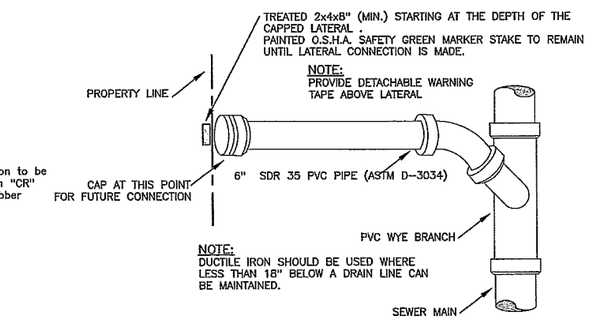


Drop Manhole Detail
(NOT TO SCALE)

NOTE:
ALL SEWER CONSTRUCTION SHALL BE WATER TIGHT.

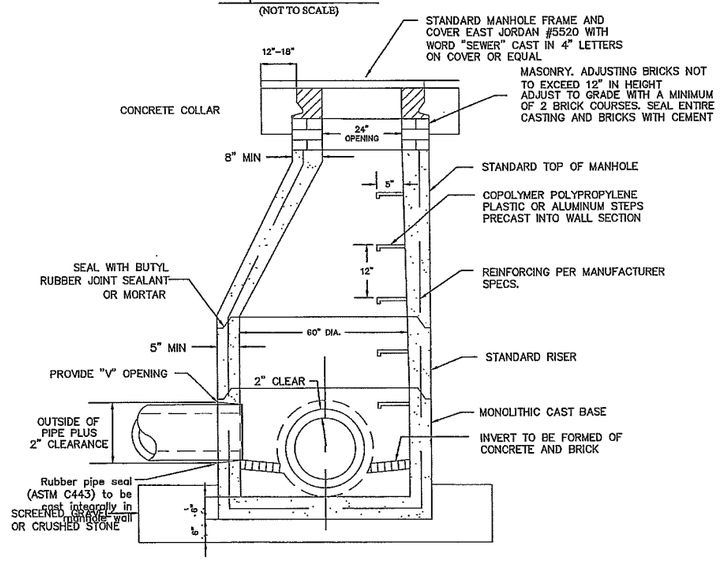


SECTION VIEW

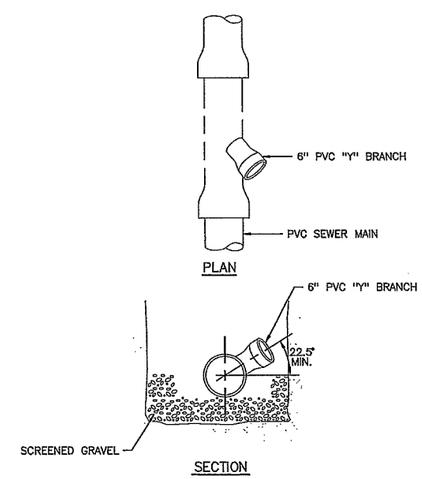


PLAN VIEW

Sewer Service Connection Detail
(NOT TO SCALE)



Sewer Manhole Detail
(NOT TO SCALE)



Sewer "Y" Branch
(NOT TO SCALE)

REVISIONS

REV	DATE	COMMENT	BY
1	5/10/17	MULTIPLE REVISIONS	RMG
2	7/11/17	MULTIPLE REVISIONS	RMG
3	11/09/17	MULTIPLE REVISIONS	RMG
4	6/04/18	REVISIONS PER WESTON & SAMPSON	RMG

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HOLDEN, MASSACHUSETTS

SCALE: AS NOTED

OWNED BY & PREPARED FOR

JACKSON WOODS INVESTMENTS, LLC.
87 MAIN STREET
RUTLAND, MA. 01543

New England Environmental Design, LLC
Environmental Consultants ■ Civil Engineering Consultants
Land Surveying Consultants
P.O. Box 376 Rutland, MA 01543
(508) 829-7222 Ph (508) 829-7522 Fax

Date: September 07, 2015
Drawn By: RMG
Checked By: JBK
Job #: 907-13

D-04

Force Main Construction Notes:

1. Sewer force main to have a minimum of 48" of cover.
2. A 2 direction cleanout shall be installed at intervals not to exceed 500 feet along the length of the force main.
3. As far as possible, the force main should be installed to provide a constant upgrade profile. Otherwise, an automatic air relief valve should be placed at all high points in the force main.

Gravity Sewer Construction Notes:

1. Where feasible, sewers shall be separated a minimum of 10 feet, horizontally, from any existing or proposed water main.
2. Where a 10 foot lateral separation between sewer and water can not be maintained, the water main shall be located within a separate trench and the crown of the sewer shall be placed a minimum of 18" below the invert of the water main.
3. Where sewers cross water mains, the crown of the sewer shall be laid 18" below the invert of the water main. Where this requirement can not be meet, the water line shall be constructed of mechanical–joint pipe for a distance of 10 feet of either side of the crossing. One full length of water main shall be centered over the sewer so that both joints will be as far as possible from the sewer. Both the water and sewer lines shall be encased in concrete for 10 feet either side of the crossing where the required vertical separation can not be provided.
4. All sewer piping and/or structures located within 100 feet of any wetland, surface water–body, or detention pond, shall be built using watertight construction methods and materials.

Sanitary Sewer Testing

A. Gravity Sewer Leakage Test; Low pressure air test as follows:
1. Plug ends of section to be tested.
2. Supply air slowly to the pipe to be tested until the air pressure inside the pipe is 4.0 psi greater than the average back prissure of any groundwater submerging the pipe.
3. Disconnect air supply and allow a minimum of two minutes for stabilization of pressure.
4. Following stabilization period, measure drop in pressure over the text period within the following times:

Pipe Size inches	Test Period minutes
4	4
6	4
8	6
10	6
12	7
15	8

5. Acceptable drop: Not more than 0.5 psi.

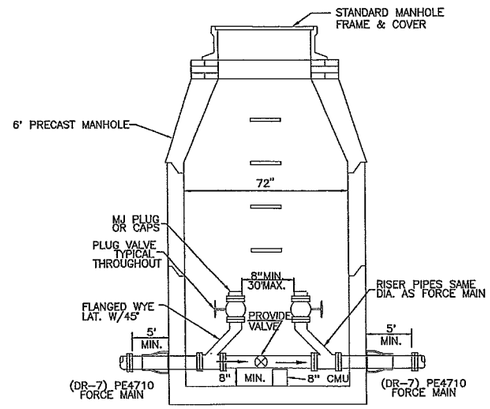
B. Forcemain and Pressure Sewer Test; Hydrostatic test as follows:
1. Fill section of pipe with water and expel all air.
2. Pressurize to 1.5 times the normal operating pressure but not less than 175 psi.
3. Measure leakage over a 2–hour test period.
4. Acceptable leakage: Less than 5 gallons per day per inch diameter per mile of pipe tested.

C. Deflection Test for Gravity Sewer Pipe:
Test pipe after final backfill has been in place at least 30 days for stabilization.Test with rigid ball or mandrel with a diameter of not less than 95% of the base inside diameter of the pipe as specified by ASTM. The test should be performed without mechanical pulling devices.

D. Manhole (Including Wet Well) Leakage Test; Vacuum test as follows:
1. The vacuum test shall be performed prior to backfilling the manhole, filling joints, and constructing the invert and benches. All pipe connections shall be made prior to the test.
2. Plug pipe openings and securely brace the plugs and pipe.
3. Set the tester onto the top section of the manhole and inflate the compression band to effect a seal between the structure and the vacuum base.
4. Connect the vacuum pump to the outlet port, ipen the valve, start the motor and draw a vacuum of 10" mercury.
5. Close the valve and monitor the vacuum gauge.
6. The test shall pass if the vacuum holds at 10" mercury or drops no lower than 9" within the following times:

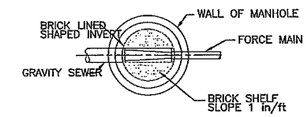
Manhole Depth feet	Time minutes
0–10	2
10–15	2.5
> 15	3

Testing requirements are to meet the Town of Holden DPW hydrostatic testing for water mains as modified by the DPW Director or it's representative.

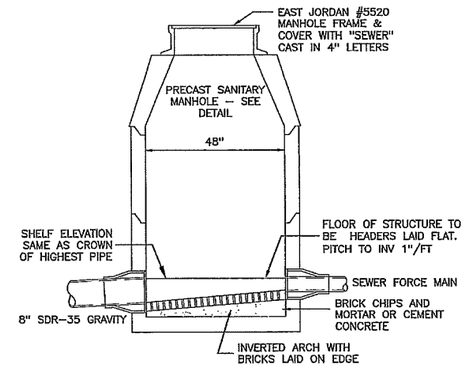


NOTES:
1) INSTALL AT ALL LOW POINTS AND 1,000' INTERVALS.
2) ALL PIPES, VALVES, AND FITTINGS TO BE DUCTILE IRON.

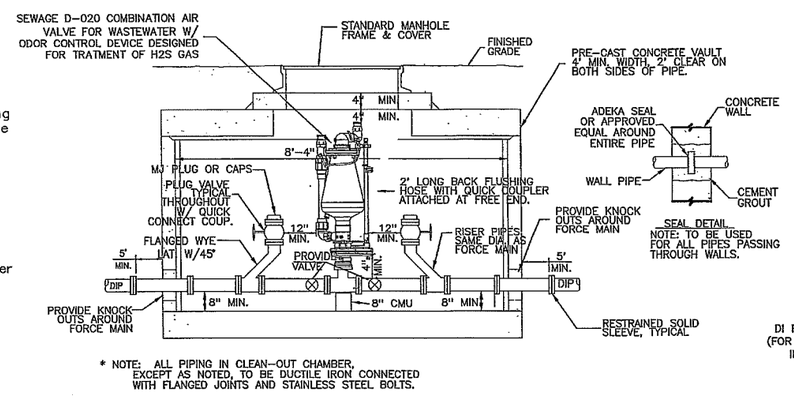
Force Main Cleanout
(NOT TO SCALE)



Plan View of Invert

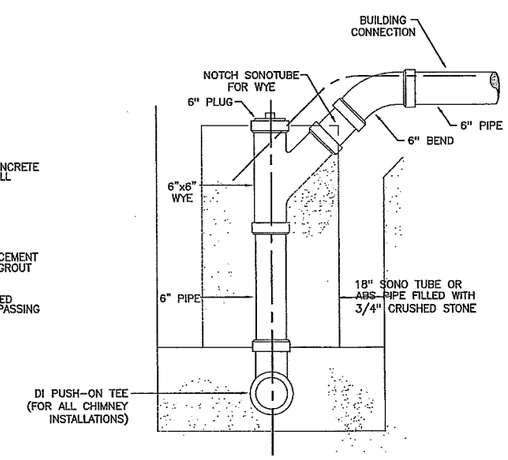


Force Main Discharge Manhole
(NOT TO SCALE)



* NOTE: ALL PIPING IN CLEAN–OUT CHAMBER, EXCEPT AS NOTED, TO BE DUCTILE IRON CONNECTED WITH FLANGED JOINTS AND STAINLESS STEEL BOLTS.

Force Main Cleanout W/ Sewage Air Release Valve
(NOT TO SCALE)



SEWER SERVICE CHIMNEY
(NOT TO SCALE)

REVISIONS

REV	DATE	COMMENT	BY
1	7/11/17	MULTIPLE REVISIONS	RMG
2	11/09/17	MULTIPLE REVISIONS	RMG
3	5/04/18	REVISIONS PER WESTON & SAMPSON	RMG
4	6/01/18	REVISIONS PER WESTON & SAMPSON	RMG

811 DigSafe MA-ME-NH-RI-VT
CONTRACTOR TO VERIFY ACTUAL LOCATION OF EXISTING UTILITY SERVICES IN THE FIELD PRIOR TO CONSTRUCTION.

COMMONWEALTH OF MASSACHUSETTS
JAMES B. KALLOCH
CIVIL
No. 24532
REGISTERED PROFESSIONAL ENGINEER

James B. Kalloch - PE No.24532

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LOCATED ON
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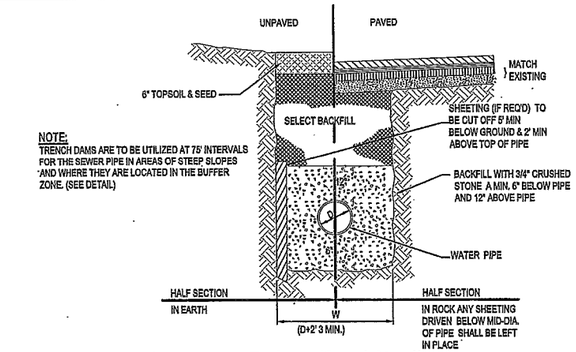
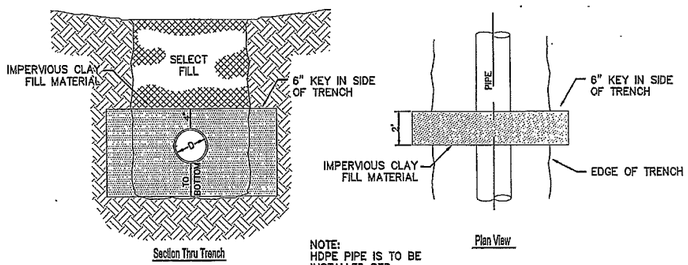


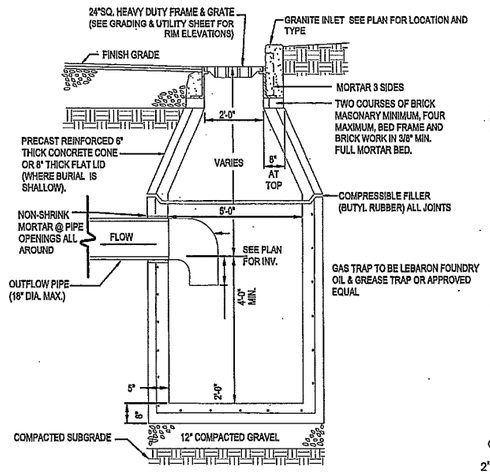
NOTE:
TRENCH DAMS ARE TO BE UTILIZED AT 75' INTERVALS FOR THE SEWER PIPE IN AREAS OF STEEP SLOPES AND WHERE THEY ARE LOCATED IN THE BUFFER ZONE. (SEE DETAIL)

Drainage Trench Detail
(NOT TO SCALE)

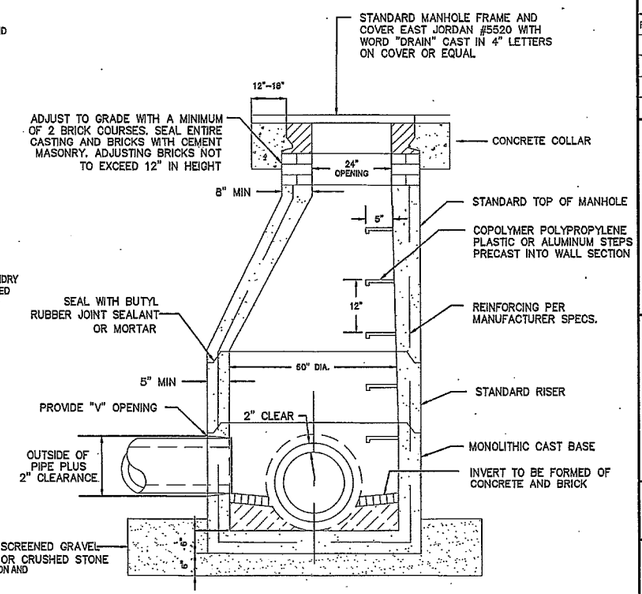


NOTE:
HDPE PIPE IS TO BE INSTALLED PER MANUFACTURER SPECIFICATIONS

Trench Dam Detail
(NOT TO SCALE)

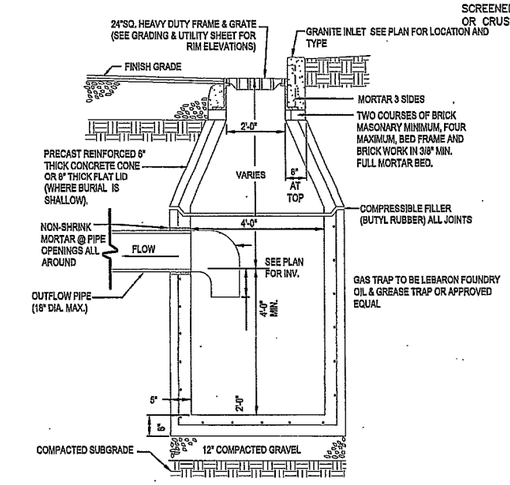


Double Catch Basin Detail
(NOT TO SCALE)

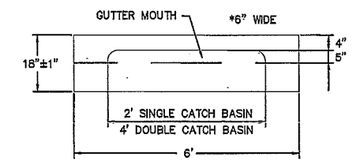


NOTES:
1. ALL STRUCTURES SHALL BE SUITABLE FOR H-20 LOADING AND SHALL MEET THE REQUIREMENTS OF ASTM C478.
2. USE PRECAST FLAT SLAB TOP FOR SHALLOW INVERT APPLICATIONS

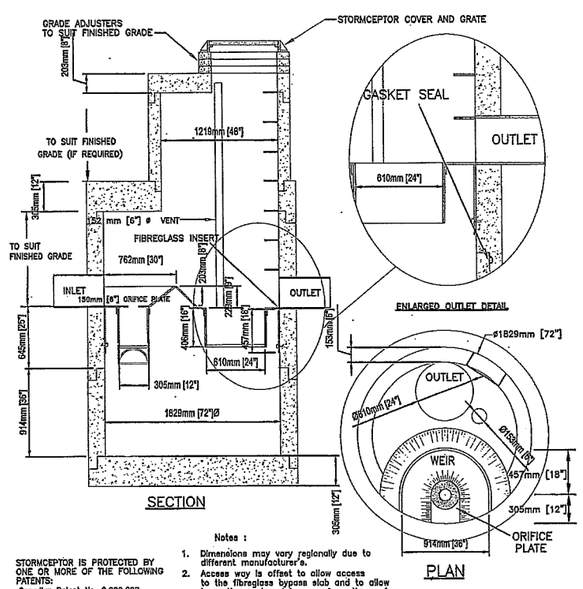
Drain Manhole Detail
(NOT TO SCALE)



Catch Basin Detail
(NOT TO SCALE)



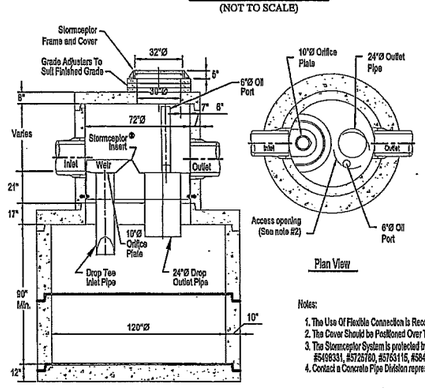
Granite Inlet Detail
(NOT TO SCALE)



STORMCEPTOR IS PROTECTED BY ONE OR MORE OF THE FOLLOWING PATENTS:
Canadian Patent No. 2,009,208
Canadian Patent No. 2,137,942
U.S. Patent No. 4,985,148
U.S. Patent No. 5,498,331
U.S. Patent No. 5,725,760
U.S. Patent No. 5,753,115

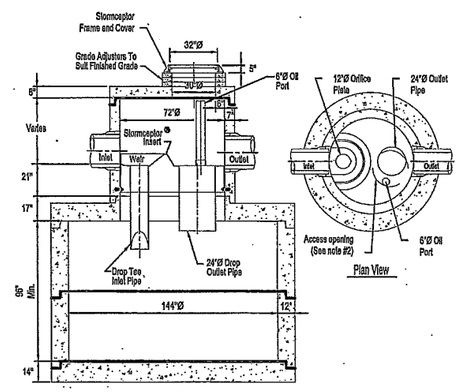
Notes :
1. Dimensions may vary regionally due to different manufacturer's.
2. Access way is offset to allow access to the fibreglass bypass slab and to allow inspection and maintenance from the surface.
3. Pipe installation by grouting or flexible boots.
4. Flexible boots may not be suitable for all installations. Please contact your sales representative for further information.
5. 610 mm [24"] outlet to be used for cleanout access to the treatment chamber.
6. Safety grates for the 610 mm [24"] outlet are available.

STC 900 Precast Concrete Stormceptor Or Equal Fiberglass Disc Design - 900 U.S. Gallon Capacity
(NOT TO SCALE)



Notes:
1. The Use Of Flexible Connection Is Recommended at The Inlet and Outlet Where Applicable.
2. The Cover Should be Positioned Over The Outlet Drop Pipe and The Oil Port.
3. The Stormceptor System is protected by one or more of the following U.S. Patents: #4985148, #5498331, #5725760, #5753115, #5849181, #6068765, #6371690.
4. Contact a Concrete Pipe Division representative for further details not listed on this drawing.

STC 4800 Precast Concrete Stormceptor Or Equal Fiberglass Disc Design - 4800 U.S. Gallon Capacity
(NOT TO SCALE)



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STC 7200 Precast Concrete Stormceptor Or Equal Fiberglass Disc Design - 7200 U.S. Gallon Capacity
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REVISIONS

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1	2/27/17	MULTIPLE REVISIONS	RMG
2	5/10/17	MULTIPLE REVISIONS	RMG
3	7/11/17	MULTIPLE REVISIONS	RMG
4	7/19/17	MULTIPLE REVISIONS	RMG

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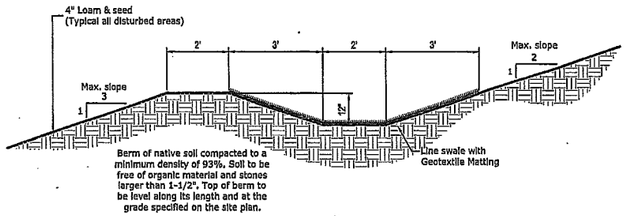
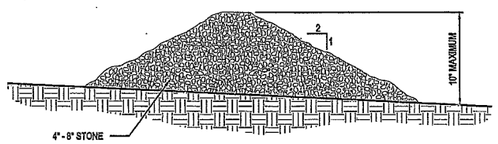
D-06

Sheet 6 of 10



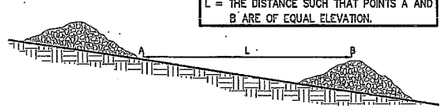
Drainage Swale
(NOT TO SCALE)



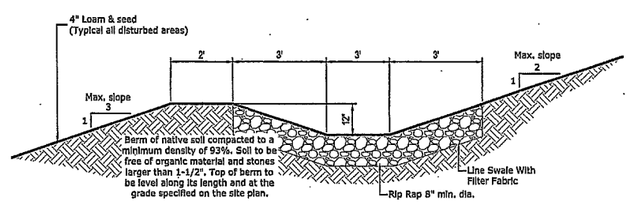
SPACING BETWEEN CHECK DAMS

NOTE:
CHECK DAMS SHOULD BE PLACED IN DRAINAGE SWALES WHERE EROSION OCCURS AS A RESULT OF HIGH WATER VELOCITY

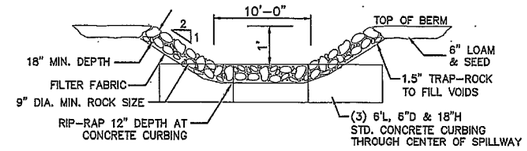
A = THE TOE OF THE UPSTREAM CHECK DAM.
B = TOP OF THE DOWNSTREAM CHECK DAM.
L = THE DISTANCE SUCH THAT POINTS A AND B ARE OF EQUAL ELEVATION.



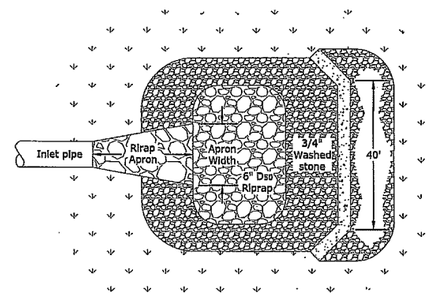
Stone Check Dam
(NOT TO SCALE)

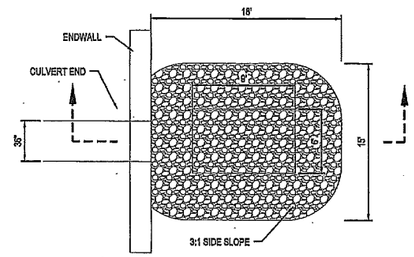


Rip Rap Lined Swale
(NOT TO SCALE)

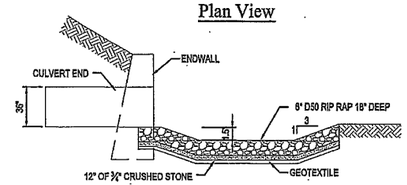


Emergency Spillway Detail
(NOT TO SCALE)



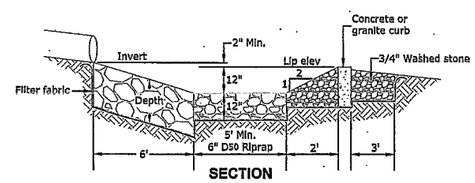


Plan View



Section A-A

Scour Hole Detail
(NOT TO SCALE)



Level Spreader Detail
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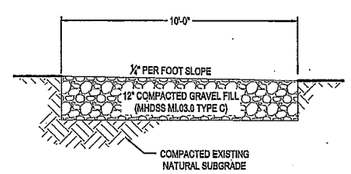
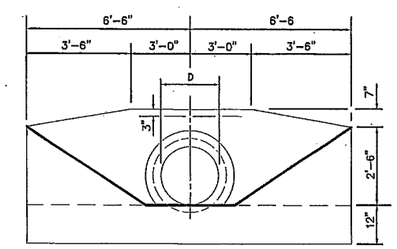


Cross Country Access Detail
(NOT TO SCALE)



Precast Concrete Headwall Detail
(NOT TO SCALE)

REVISIONS

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1	6/10/17	MULTIPLE REVISIONS	RMG
2	7/11/17	MULTIPLE REVISIONS	RMG
3	8/07/17	MULTIPLE REVISIONS	RMG
4	8/19/17	REVISE SPILLWAY DETAIL	RMG

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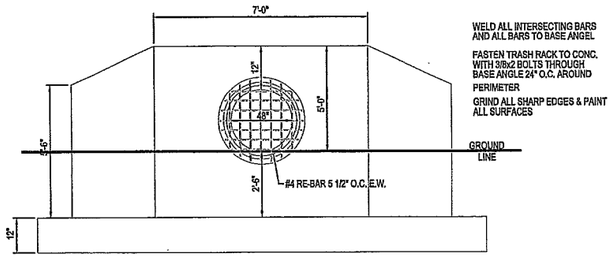
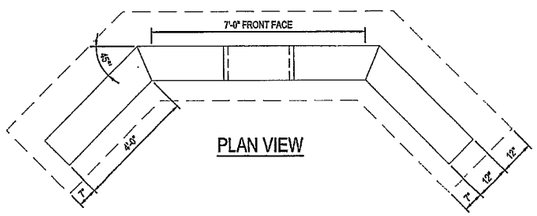
Sheet 7 of 10

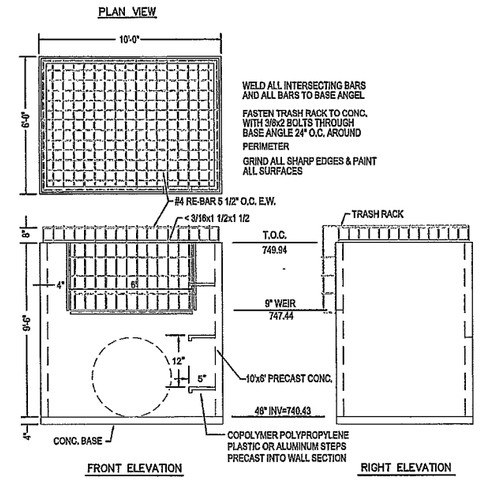


ELEVATION



PLAN VIEW

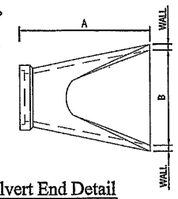
Precast Concrete Wingwall At Crossing
(NOT TO SCALE)



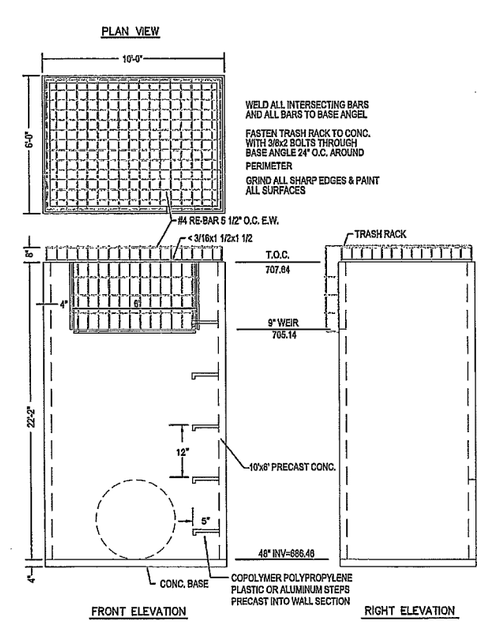
Inlet Structure IS-1
(NOT TO SCALE)

ALL AREAS AROUND THE TOP AND SIDES OF THE FLARED ENDS MUST BE STABILIZED WITH LOAM AND SEED AT 3' MIN. ALL DIRECTIONS

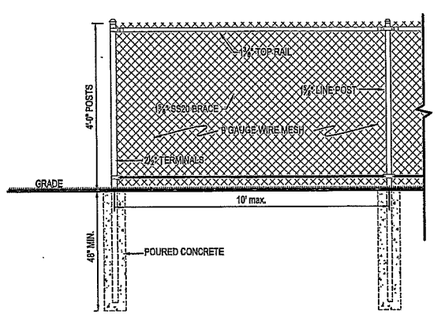
PIPE Ø	A	B
24"	73.5"	48"
36"	97.75"	72"
42"	103.5"	76"



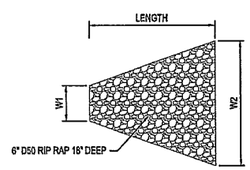
HDPE Culvert End Detail
(NOT TO SCALE)



Inlet Structure IS-2
(NOT TO SCALE)



Chain Link Fence Detail
(NOT TO SCALE)



OUTLET	PIPE Ø	W1	W2	LENGTH	DEPTH
FE-1	36"	9.0'	18.8'	14'	18"
FE-2	36"	9.0'	22.3'	19'	18"
FE-3	24"	6.0'	15.8'	14'	18"
FE-4	36"	9.0'	23.0'	20'	18"
FE-5	24"	6.0'	15.1'	13'	18"
FE-6	36"	9.0'	23.0'	20'	18"
FE-7	24"	6.0'	18.6'	16'	18"
FE-8	24"	6.0'	14.4'	12'	18"
FE-9	42"	10.5'	21.7'	16'	18"
FE-10	42"	10.5'	24.5'	20'	18"
FE-11	36"	9.0'	21.6'	16'	18"
FE-12	42"	10.5'	25.9'	22'	18"
HW L28R	12"	3.0'	10.0'	10'	18"
HW L57R	12"	3.0'	10.0'	10'	18"
FE-13	12"	3.0'	10.0'	10'	18"
IS-1 Out	48"	12.0'	23.9'	17'	18"
IS-2 Out	48"	12.0'	28.0'	20'	18"

Rip-rap Apron Detail
(NOT TO SCALE)

REVISIONS

REV	DATE	COMMENT	BY
1	2/27/17	MULTIPLE REVISIONS	RMG
2	5/10/17	MULTIPLE REVISIONS	RMG
3	7/11/17	MULTIPLE REVISIONS	RMG
4	9/07/17	MULTIPLE REVISIONS	RMG

811 DigSafe MA-ME-NH-RI-VT
CONTRACTOR TO VERIFY ACTUAL LOCATION OF EXISTING UTILITY SERVICES IN THE FIELD PRIOR TO CONSTRUCTION.

COMMONWEALTH OF MASSACHUSETTS JAMES B. KALLOCH No. 24532 REGISTERED PROFESSIONAL ENGINEER

James B. Kalloch - PE No.24532

THIS SHEET IS RESERVED FOR CONSTRUCTION DETAILS FOR INSTRUCTION PURPOSES ONLY DO NOT SCALE DRAWINGS ON THIS SHEET

THIS ENDORSEMENT MAKES NO DETERMINATION AS TO ZONING COMPLIANCE OR PLAN ACCURACY.

APPROVAL UNDER THE SUBDIVISION CONTROL LAW IS REQUIRED.

HOLDEN PLANNING BOARD:

Date: _____

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Decision of the Town of Holden Planning Board approving this plan was recorded in the office of the Holden Town Clerk on
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Town Clerk Date

AMENDED DEFINITIVE PLAN GREENWOOD II

LOCATED ON
UNION STREET
HOLDEN, MASSACHUSETTS

SCALE: AS NOTED

OWNED BY & PREPARED FOR

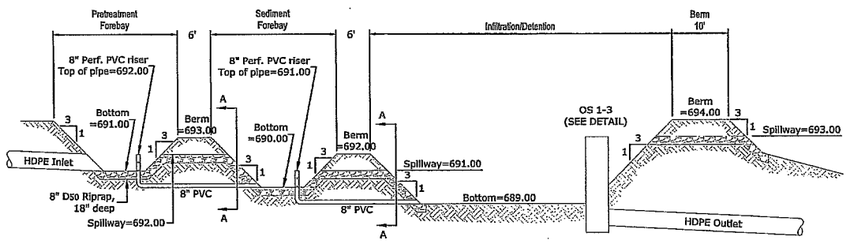
JACKSON WOODS INVESTMENTS, LLC.
87 MAIN STREET
RUTLAND, MA. 01543

New England Environmental Design, LLC
Environmental Consultants ■ Civil Engineering Consultants
Land Surveying Consultants
P.O. Box 376 Rutland, MA 01543
(508) 829-7222 Ph (508) 829-7522 Fax

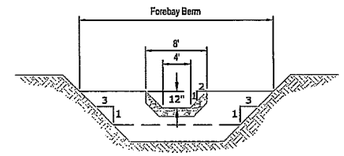
Date: September 07, 2015
Drawn By: RMG
Checked By: JBK
Job #: 907-13

D-08

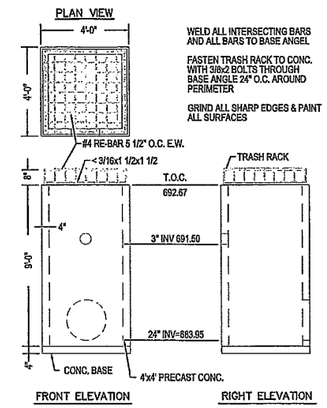
Sheet 8 of 10



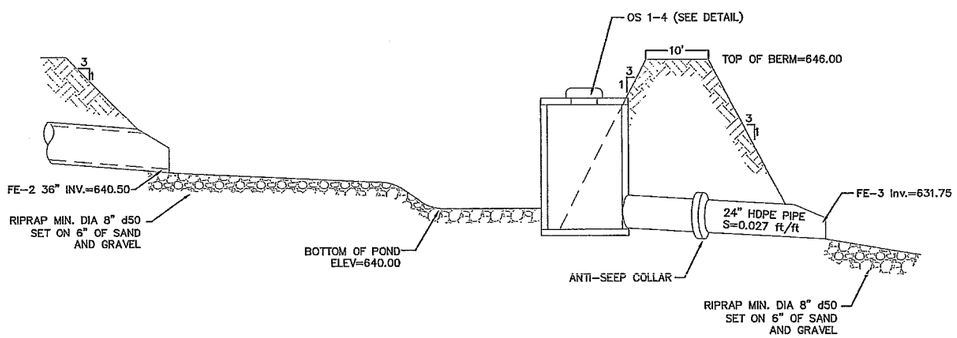
Detention/Infiltration Basin 1-3
(NOT TO SCALE)



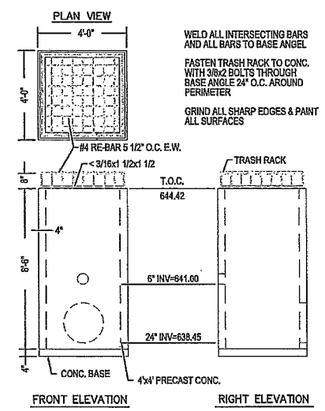
Spillway Section A-A
(NOT TO SCALE)



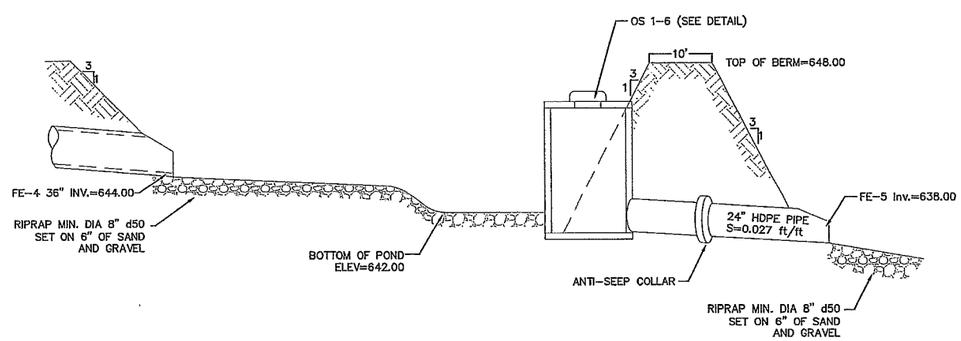
Outlet Structure OS 1-3
(NOT TO SCALE)



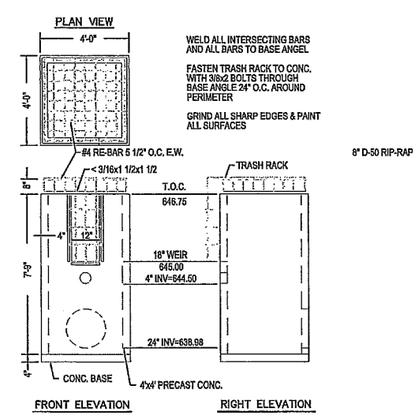
Detention/Infiltration Basin 1-4
(NOT TO SCALE)



Outlet Structure OS 1-4
(NOT TO SCALE)



Detention/Infiltration Basin 1-5
(NOT TO SCALE)



Outlet Structure OS 1-5
(NOT TO SCALE)

REVISIONS

REV	DATE	COMMENT	BY
1	1/31/17	MULTIPLE REVISIONS	RMG
2	2/27/17	MULTIPLE REVISIONS	RMG
3	5/10/17	MULTIPLE REVISIONS	RMG
4	7/11/17	MULTIPLE REVISIONS	RMG

811 DigSafe MA-ME-NH-RI-VT
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LOCATED ON
UNION STREET
HOLDEN, MASSACHUSETTS

SCALE: AS NOTED

OWNED BY & PREPARED FOR

JACKSON WOODS INVESTMENTS, LLC.
87 MAIN STREET
RUTLAND, MA. 01543

New England Environmental Design, LLC
Environmental Consultants ■ Civil Engineering Consultants
Land Surveying Consultants
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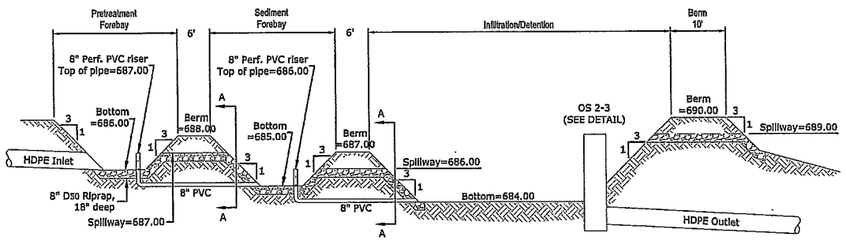
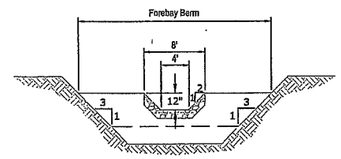
(508) 829-7222 Ph (508) 829-7522 Fax

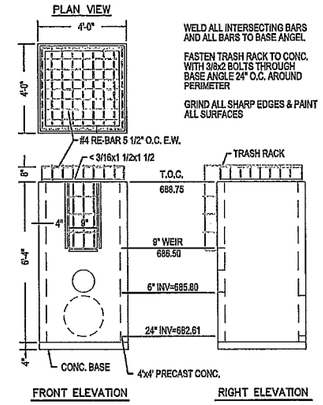
Date: September 07, 2015	D-09
Drawn By: RMG	
Checked By: JBK	
Job #: 907-13	Sheet 9 of 10



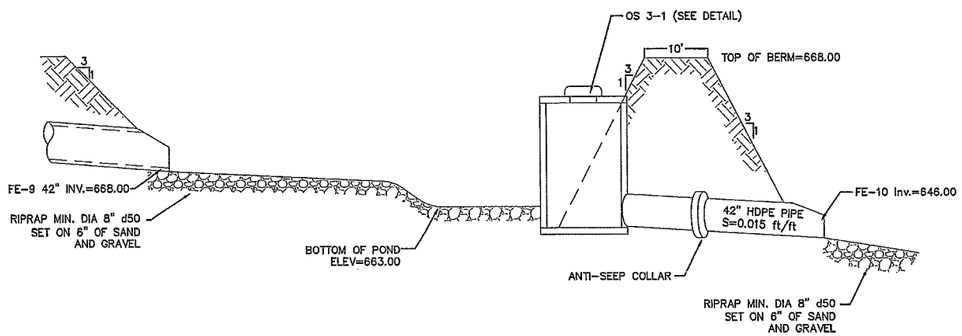
Detention/Infiltration Basin 2-3
(NOT TO SCALE)



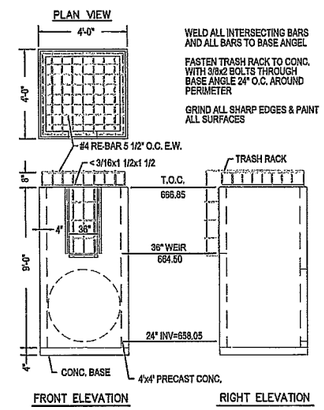
Spillway Section A-A
(NOT TO SCALE)



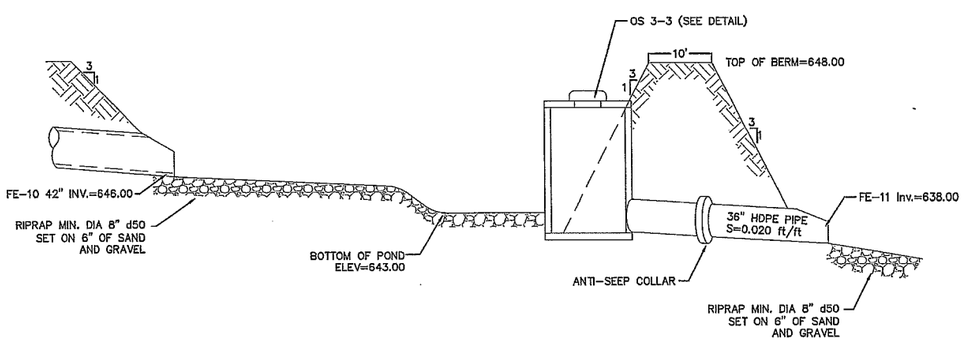
Outlet Structure OS 2-3
(NOT TO SCALE)



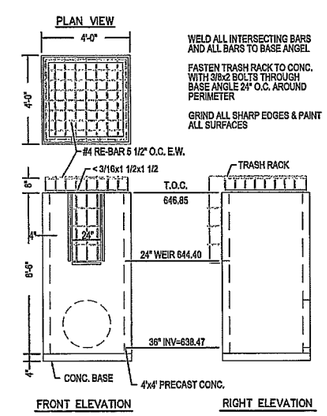
Detention/Infiltration Basin 3-1
(NOT TO SCALE)



Outlet Structure OS 3-1
(NOT TO SCALE)



Detention/Infiltration Basin 3-3
(NOT TO SCALE)



Outlet Structure OS 3-3
(NOT TO SCALE)

REVISIONS

REV	DATE	COMMENT	BY
1	1/31/17	MULTIPLE REVISIONS	RMG
2	2/27/17	MULTIPLE REVISIONS	RMG
3	5/10/17	MULTIPLE REVISIONS	RMG
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Town Clerk Date

AMENDED DEFINITIVE PLAN GREENWOOD II

LOCATED ON
UNION STREET
HOLDEN, MASSACHUSETTS

SCALE: AS NOTED

OWNED BY & PREPARED FOR

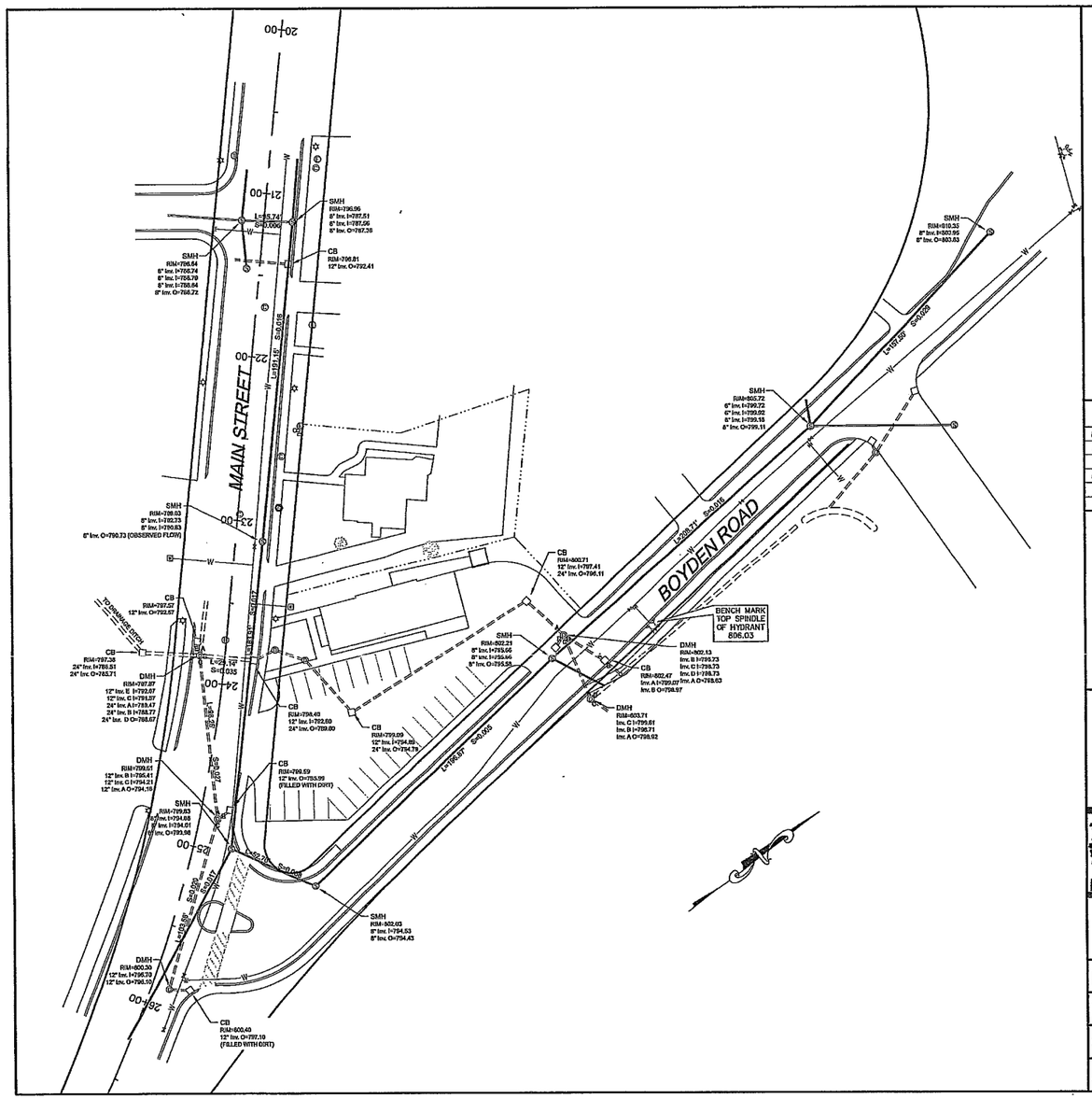
JACKSON WOODS INVESTMENTS, LLC.
87 MAIN STREET
RUTLAND, MA. 01543

New England Environmental Design, LLC
Environmental Consultants ■ Civil Engineering Consultants
Land Surveying Consultants
P.O. Box 376 Rutland, MA 01543
(508) 829-7222 Ph (508) 829-7522 Fax

Date: September 07, 2015
Drawn By: RMG
Checked By: JBK
Job #: 907-13

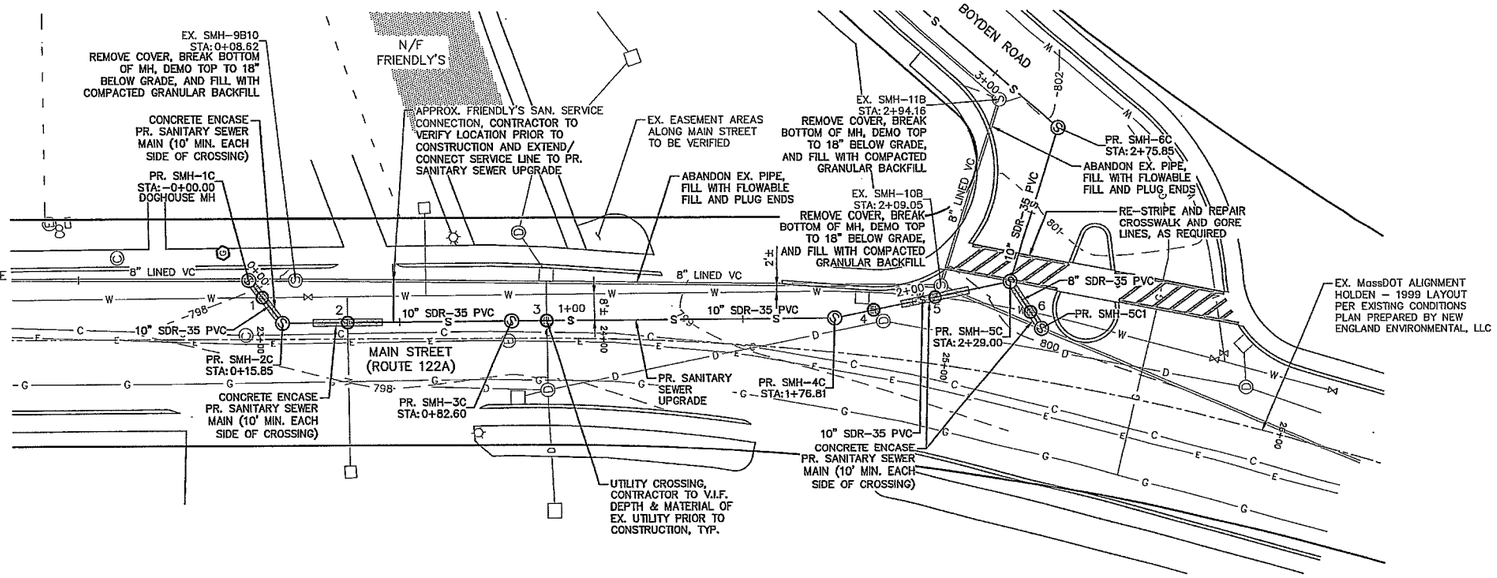
D-10

Sheet 10 of 10


MAIN STREET
BOYDEN ROAD
BENCH MARK
TOP SPINDLE
OF HYDRANT
806.03
SMH
RIM=796.96
8" Inv. I=787.51
8" Inv. I=787.56
8" Inv. O=787.26
SMH
RIM=798.64
8" Inv. I=756.74
8" Inv. I=756.70
8" Inv. I=756.64
8" Inv. O=756.72
CB
RIM=798.81
12" Inv. O=792.41
SMH
RIM=798.52
8" Inv. I=795.73
8" Inv. I=795.63
8" Inv. O=790.73 (OBSERVED FLOW)
CB
RIM=797.57
12" Inv. O=792.57
CB
RIM=797.28
24" Inv. I=785.51
24" Inv. O=785.71
DMH
RIM=797.87
12" Inv. E I=792.07
12" Inv. C I=791.97
24" Inv. A I=789.47
24" Inv. B I=788.77
24" Inv. D O=788.67
CB
RIM=798.49
12" Inv. I=792.60
24" Inv. O=789.60
CB
RIM=799.09
12" Inv. I=794.59
24" Inv. O=794.79
CB
RIM=799.59
12" Inv. O=795.95
(FILLED WITH DIRT)
DMH
RIM=799.51
12" Inv. B I=795.41
12" Inv. C I=794.21
12" Inv. A O=794.10
SMH
RIM=799.53
8" Inv. I=794.65
8" Inv. I=794.01
8" Inv. O=793.98
SMH
RIM=502.03
8" Inv. I=794.53
8" Inv. O=794.43
DMH
RIM=800.30
12" Inv. I=796.70
12" Inv. O=796.10
CB
RIM=800.40
12" Inv. O=797.10
(FILLED WITH DIRT)
CB
RIM=803.71
12" Inv. I=797.41
24" Inv. O=796.11
SMH
RIM=802.21
8" Inv. I=795.66
8" Inv. I=795.66
8" Inv. O=795.55
DMH
RIM=802.13
Inv. B I=795.73
Inv. C I=795.73
Inv. D I=795.73
Inv. A O=795.63
CB
RIM=802.47
Inv. A I=799.97
Inv. B O=799.97
DMH
RIM=803.71
Inv. C I=795.61
Inv. B I=795.71
Inv. A O=795.92
SMH
RIM=805.72
6" Inv. I=799.72
6" Inv. I=799.62
6" Inv. I=799.55
6" Inv. O=799.11
SMH
RIM=810.32
8" Inv. I=803.96
8" Inv. O=803.83
L=191.49' S=0.016
L=197.60' S=0.025
L=208.71' S=0.016
L=196.87' S=0.003
L=202.70' S=0.003
L=102.55' S=0.017
L=101.45' S=0.017
L=52.70' S=0.017
L=52.70' S=0.017
L=52.70

LEGEND

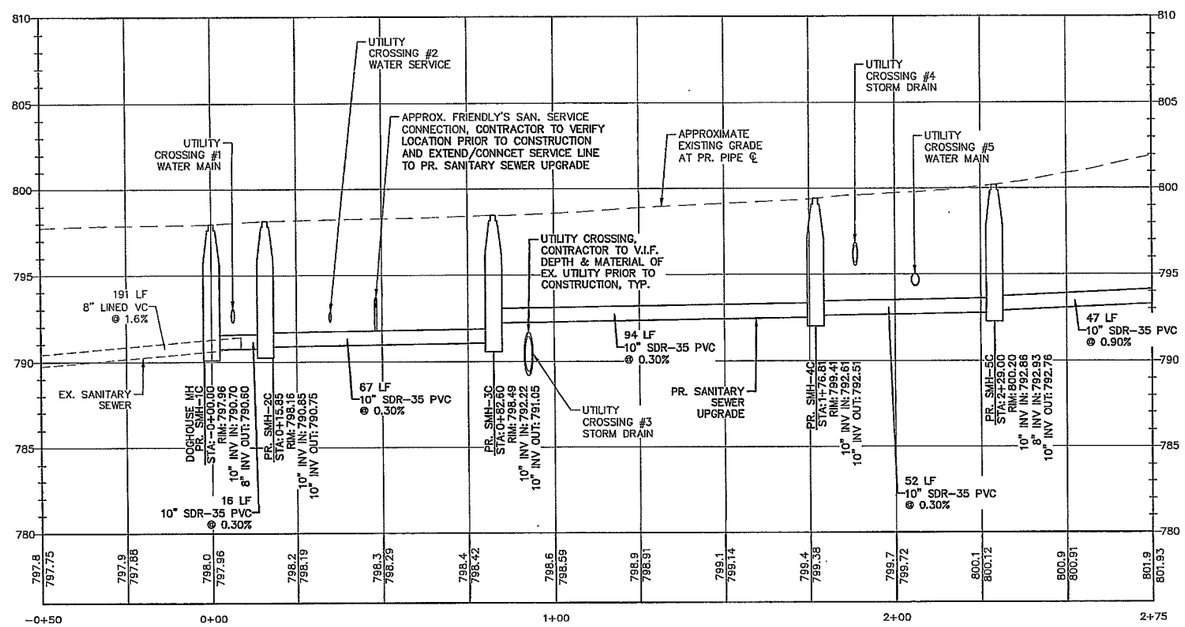
C	COMMUNICATION CONDUIT
D	DRAINAGE PIPE
E	ELECTRIC CONDUIT
G	GAS PIPE
S	SANITARY PIPE
W	WATER PIPE
Ⓒ	COMMUNICATION MANHOLE
Ⓓ	DRAINAGE MANHOLE
□	DRAINAGE INLET
Ⓔ	ELECTRIC MANHOLE
Ⓢ	SANITARY MANHOLE
⋈	WATER VALVE
	CONCRETE ENCASEMENT
1	UTILITY CROSSING
EX.	EXISTING
PR.	PROPOSED
V.I.F.	VERIFY IN FIELD



PLAN

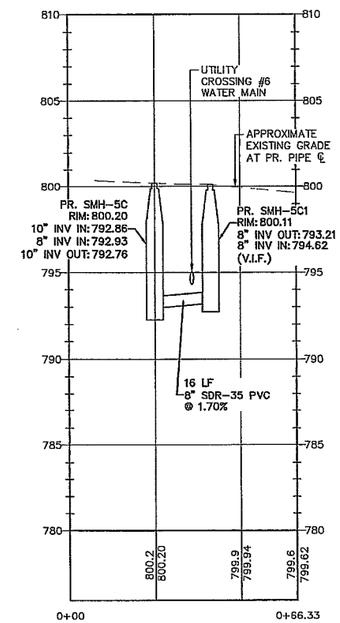
SCALE: 1"=20'

IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO FIELD VERIFY BY TEST PIT ALL UTILITY INVERTS AND SERVICE CONNECTIONS PRIOR TO CONSTRUCTION. ALL DISCREPANCIES SHALL BE REPORTED TO THE ENGINEER.



PROFILE

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



SERVICE CONNECTION PROFILE

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

REVISIONS

REV	DATE	COMMENT	BY
0	3/27/18	MAIN STREET & BOYDEN ROAD GRAVITY SEWER UPGRADE	BLM
1	4/27/18	RESPONSE TO PEER REVIEW COMMENTS	BLM
2	6/5/18	RESPONSE TO PEER REVIEW COMMENTS	BLM
3			

COMMONWEALTH OF MASSACHUSETTS JESSE M. MORENO CIVIL No. 47315 REGISTERED PROFESSIONAL ENGINEER 6-5-18

Jesse M. Moreno - PE No.47315

GENERAL NOTES:

1. EXISTING CONDITIONS PLAN PREPARED BY NEW ENGLAND ENVIRONMENTAL, LLC DATED MARCH 7, 2018.
2. ALL UNDERGROUND UTILITY INFORMATION WAS DETERMINED FROM SURFACE INVESTIGATIONS AND EXISTING PLANS OF RECORD. THE CONTRACTOR SHALL LOCATE ALL UNDERGROUND UTILITIES IN THE FIELD PRIOR TO ANY SITE WORK. CALL DIG-SAFE (888) 344-7233 72-HOURS PRIOR TO ANY EXCAVATION.
3. CONTRACTOR SHALL RE-CAMERA EXISTING SANITARY MAIN AS REQUIRED TO VERIFY ALL SERVICE CONNECTIONS. RESULTS SHALL BE PROVIDED TO ENGINEER FOR REVIEW PRIOR TO CONSTRUCTION.
4. A MassDOT ACCESS PERMIT SHALL BE OBTAINED PRIOR TO CONSTRUCTION. THIS SHALL INCLUDE A TRAFFIC CONTROL PLAN.
5. PIPE SHALL BE LAID STARTING AT THE DOWNSTREAM END AND WORKING UP TO THE UPSTREAM CONNECTION.
6. SEE SHEET SS-03 FOR ADDITIONAL NOTES REGARDING THE GRAVITY SANITARY MAIN UPGRADE DESIGN AND CONSTRUCTION.

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UNION STREET
HOLDEN, MASSACHUSETTS

SCALE: 1" = 10'

OWNED BY & PREPARED FOR

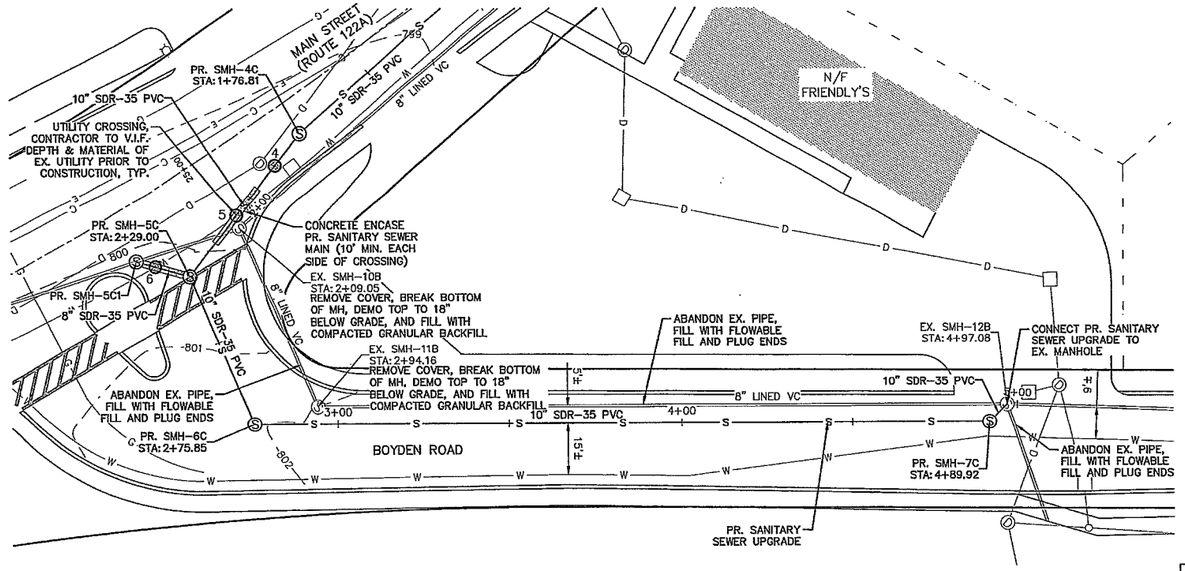
JACKSON WOODS INVESTMENTS, LLC.
87 MAIN STREET
RUTLAND, MA. 01543

ProTerra DESIGN GROUP, LLC
4 Bay Road, Bldg A, Suite 200
Hadley, MA 01035
Ph: (413)320-4918

Date: March 27, 2018	SS-01
Drawn By: BLM	
Checked By: JMM	
Job #: 16-026	Sheet 1 of 3

LEGEND

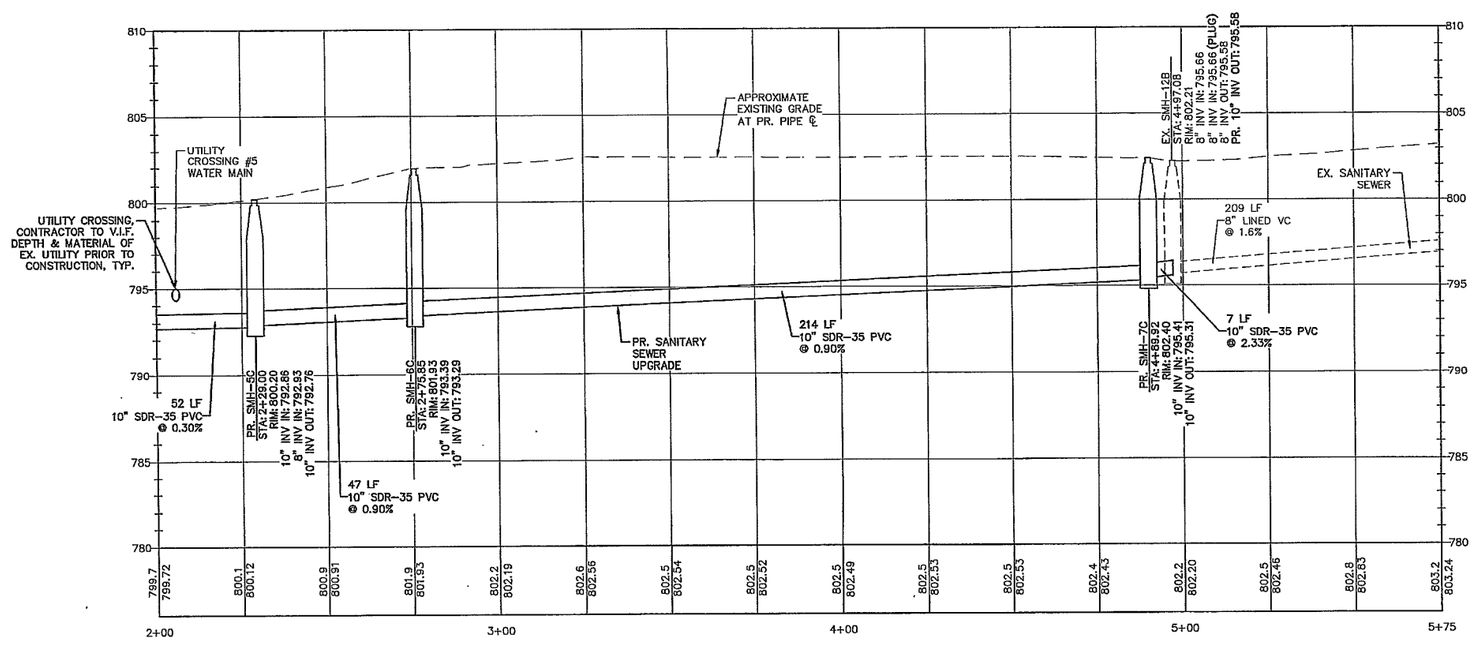
—C—	COMMUNICATION CONDUIT
—D—	DRAINAGE PIPE
—E—	ELECTRIC CONDUIT
—G—	GAS PIPE
—S—	SANITARY PIPE
—W—	WATER PIPE
Ⓒ	COMMUNICATION MANHOLE
Ⓓ	DRAINAGE MANHOLE
□	DRAINAGE INLET
Ⓔ	ELECTRIC MANHOLE
Ⓢ	SANITARY MANHOLE
⋈	WATER VALVE
CONCRETE ENCASEMENT	CONCRETE ENCASEMENT
1Ⓑ	UTILITY CROSSING
EX.	EXISTING
PR.	PROPOSED
V.I.F.	VERIFY IN FIELD



PLAN

SCALE: 1"=20'

IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO FIELD VERIFY BY TEST PIT ALL UTILITY INVERTS AND SERVICE CONNECTIONS PRIOR TO CONSTRUCTION. ALL DISCREPANCIES SHALL BE REPORTED TO THE ENGINEER.



PROFILE

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

REVISIONS

REV	DATE	COMMENT	BY
0	3/27/18	MAIN STREET & BOYDEN ROAD GRAVITY SEWER UPGRADE	BLM
1	4/27/18	RESPONSE TO PEER REVIEW COMMENTS	BLM
2	6/5/18	RESPONSE TO PEER REVIEW COMMENTS	BLM
3			

COMMONWEALTH OF MASSACHUSETTS JESSE M. MORENO 47315 REGISTERED PROFESSIONAL ENGINEER 6-5-18

Jesse M. Moreno - PE No.47315

GENERAL NOTES:

1. EXISTING CONDITIONS PLAN PREPARED BY NEW ENGLAND ENVIRONMENTAL, LLC DATED MARCH 7, 2018.
2. ALL UNDERGROUND UTILITY INFORMATION WAS DETERMINED FROM SURFACE INVESTIGATIONS AND EXISTING PLANS OF RECORD. THE CONTRACTOR SHALL LOCATE ALL UNDERGROUND UTILITIES IN THE FIELD PRIOR TO ANY SITE WORK. CALL DIG-SAFE (888) 344-7233 72-HOURS PRIOR TO ANY EXCAVATION.
3. CONTRACTOR SHALL RE-CAMERA EXISTING SANITARY MAIN AS REQUIRED TO VERIFY ALL SERVICE CONNECTIONS. RESULTS SHALL BE PROVIDED TO ENGINEER FOR REVIEW PRIOR TO CONSTRUCTION.
4. A MassDOT ACCESS PERMIT SHALL BE OBTAINED PRIOR TO CONSTRUCTION. THIS SHALL INCLUDE A TRAFFIC CONTROL PLAN.
5. PIPE SHALL BE LAID STARTING AT THE DOWNSTREAM END AND WORKING UP TO THE UPSTREAM CONNECTION.
6. SEE SHEET SS-03 FOR ADDITIONAL NOTES REGARDING THE GRAVITY SANITARY MAIN UPGRADE DESIGN AND CONSTRUCTION.

THIS ENDORSEMENT MAKES NO DETERMINATION AS TO ZONING COMPLIANCE OR PLAN ACCURACY.

APPROVAL UNDER THE SUBDIVISION CONTROL LAW IS REQUIRED.

HOLDEN PLANNING BOARD:

Date: _____

Certificate of No Appeal

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Date: _____

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Town Clerk _____ Date _____

AMENDED DEFINITIVE PLAN GREENWOOD II

LOCATED ON
UNION STREET
HOLDEN, MASSACHUSETTS

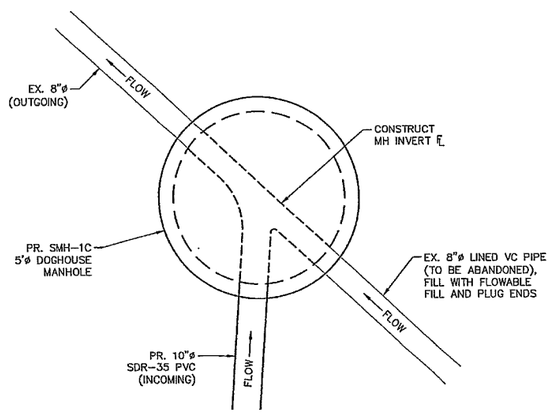
SCALE: 1" = 10'

OWNED BY & PREPARED FOR

JACKSON WOODS INVESTMENTS, LLC.
87 MAIN STREET
RUTLAND, MA. 01543

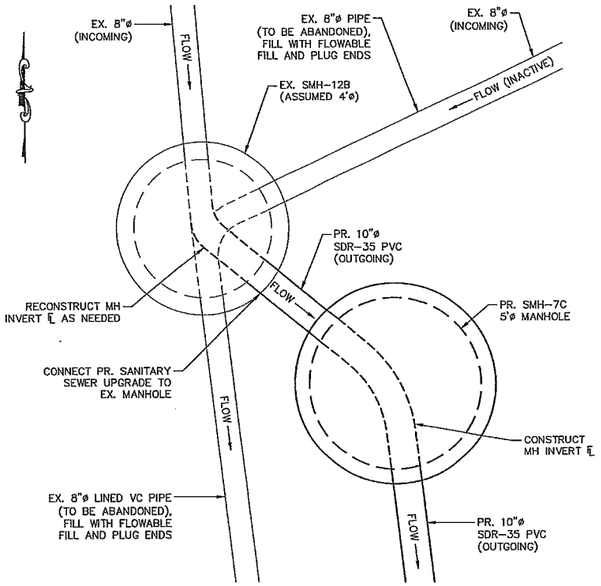
ProTerra DESIGN GROUP, LLC
4 Bay Road, Bldg A, Suite 200
Hadley, MA 01035
Ph: (413)320-4918

Date: March 27, 2018	SS-02
Drawn By: BLM	
Checked By: JMM	
Job #: 16-026	Sheet 2 of 3



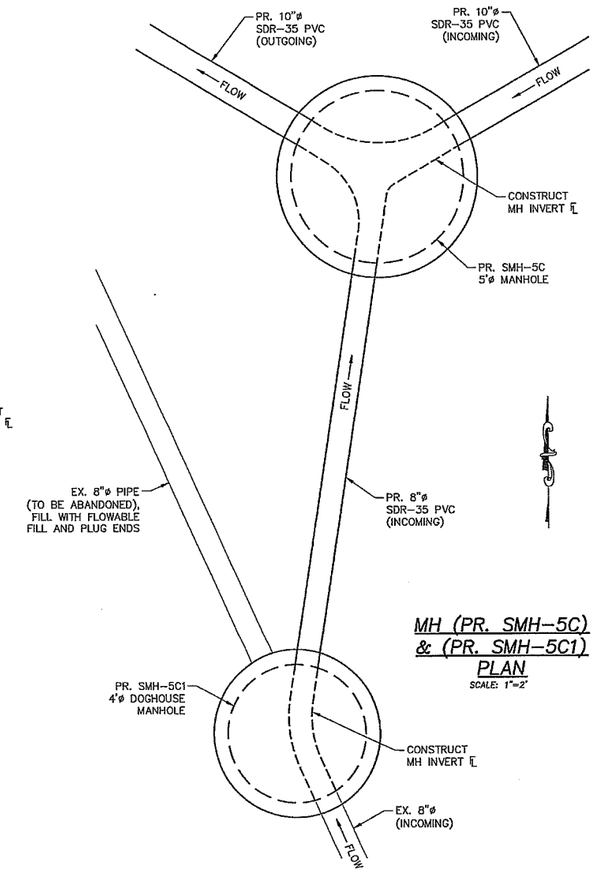
DOWNSTREAM CONNECTION MH (PR. SMH-1C) PLAN

SCALE: 1"=2'



UPSTREAM CONNECTION MH (PR. SMH-7C) PLAN

SCALE: 1"=2'



MH (PR. SMH-5C) & (PR. SMH-5C1) PLAN

SCALE: 1"=2'

HOLDEN SEWERAGE SPECIFICATIONS

SEWER PLANS AND RELATED EQUIPMENT, SUCH AS MANHOLES AND CONNECTING WYES SHALL BE CONSTRUCTED IN CONFORMITY WITH THE SPECIFICATIONS OF THE TOWN OF HOLDEN PUBLIC WORKS DEPARTMENT.

THE INSTALLATION OF SEWER PIPES AND RELATED EQUIPMENT SHALL NOT BE BACKFILLED UNTIL INSPECTED BY THE PROPER AUTHORITY.

SEWER MAINS SHALL BE SDR-35 PVC LAID TO A SLOPE NOTED ON THE PLANS. ALL SEWER LATERALS SHALL BE SDR-35 PVC LAID AT A MINIMUM SLOPE OF 2.0%. ALL SEWERS, INCLUDING LATERALS, SHALL BE LAID IN AN ENVELOPE OF ¾" WASHED GRAVEL.

LINE AND GRADE SHALL BE CONTROLLED BY THE USE OF LASER INSTRUMENTS. DEFLECTIONS IN LINE OR GRADE IN EXCESS OF ½" WILL BE CAUSE FOR REJECTION.

ALL CASTINGS AND FITTINGS SHALL BE MANUFACTURED IN NORTH AMERICA.

ALL SEWER MANHOLES SHALL BE VACUUM TESTED IN ACCORDANCE WITH ASTM C1244.

EXFILTRATION/INFILTRATION, AIR TESTS, AND TV INSPECTION

TIME FOR MAKING TESTS:

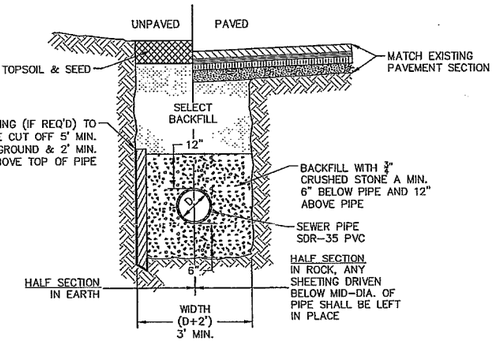
1) AFTER THE PIPE HAS BEEN LAID AND BACKFILLED, AN INFILTRATION/EXFILTRATION OR LOW PRESSURE AIR TEST SHALL BE MADE ON EACH SECTION OF PIPELINE BETWEEN MANHOLES. WHEN NO GROUNDWATER EXISTS AT THE TIME OF THE TEST, THE PIPELINE SHALL BE SUBJECTED TO AN EXFILTRATION TEST OR AN AIR TEST. TESTING SHALL BE COMPLETED BASED UPON DEP REQUIREMENTS BELOW.

TV INSPECTION:

2) WHEN THE PIPE LINES PASS AN EXFILTRATION/INFILTRATION OR AIR TEST, THEY SHALL BE SUBJECT TO A TV INSPECTION PERFORMED UNDER THE SUPERVISION OF THE ENGINEER. A RECORDING OF THE TV INSPECTION SHALL BE PROVIDED TO THE TOWN ENGINEER. ANY SECTIONS FOUND TO BE DAMAGED OR BLOCKED SHALL BE REPAIRED TO THE SATISFACTION OF THE TOWN ENGINEER OR RETESTED.

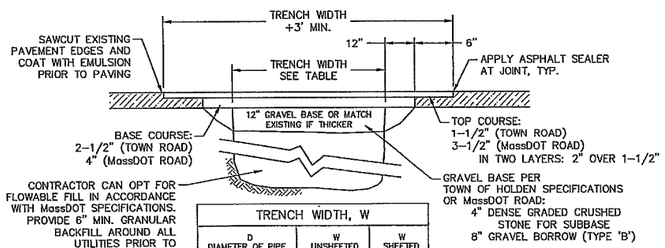
MINIMUM STANDARDS FOR WATERTIGHT CONSTRUCTION FOR SEWER PIPING

1. ALLOWABLE INFILTRATION OR EXFILTRATION SHOULD NOT EXCEED 100 GPD/INCH-DIAM/MILE OF SEWER. LEAKAGE TEST SHALL BE SPECIFIED IN THE SPECIFICATION AND MAY INCLUDE WATER OR LOW PRESSURE AIR TESTING.
2. WATERTIGHT CONSTRUCTION CONSISTS OF THE USE OF DUCTILE IRON, MECHANICAL JOINT PIPE, PRE-STRESSED CONCRETE CYLINDER PIPE, AND SOLVENT WELDED JOINT PVC PIPE AND ANY COMBINATION OF THE ABOVE.
3. PRESSURE TESTING SHOULD BE PERFORMED BY THE OWNER AFTER COMPLETION OF CONSTRUCTION, PRIOR TO STARTUP AND AFTER ON YEAR OF NATURAL SETTLING IN ORDER TO ENSURE THE WATER-TIGHTNESS OF THE AFFECTED COLLECTION SYSTEMS, MANHOLES AND PUMP STATION WET WELLS.
4. ACCEPTABLE AIR TESTING PROCEDURES ARE PRESENTED IN AMERICAN SOCIETY OF TESTING AND MATERIAL STANDARD C828-90T "STANDARD TEST METHOD FOR LOW-PRESSURE AIR TEST OF VITRIFIED CLAY PIPE". IN LIEU OF THAT STANDARD THE FOLLOWING TEST PROCEDURE IS ACCEPTABLE:
   a. PLUG ALL OPENINGS IN THE SECTION OF SEWER PIPING TO BE TESTED. PRESSURIZE THE SYSTEM TO BE TESTED TO AN AIR PRESSURE OF 5 PSI. SHUT OFF THE PRESSURIZED AIR SOURCE.
   b. ALLOW THE PRESSURE TO STABILIZE FOR A MINIMUM OF 5 MINUTES.
   c. RECORD THE STABILIZED PRESSURE IN THE TEST SECTION. RECORD THE TEST START TIME. THE MINIMUM TEST PRESSURE IS 4 PSI. THE MINIMUM TEST TIME IS 5 MINUTES. AT THE END OF THE PRESSURE TESTING TIME PERIOD RECORD THE TEST PRESSURE AND THE TEST TERMINATION TIME.
   d. IF THE PRESSURE DROP IS GREATER THAN 2 PSI DURING THE DURATION OF THE TEST, THE TESTED SECTION HAS FAILED THE TEST.
   e. TESTES ARE FAILED, REPAIRS MUST BE MADE TO THE AFFECTED SEWER PIPE AND RETESTED.
5. INSPECTIONS WILL ONLY BE MADE DURING THE HOURS OF 8:00 AM TO 4:00 PM MONDAYS THROUGH THURSDAYS AND 8:00 AM TO NOON ON FRIDAYS EXCEPT HOLIDAYS. PLEASE NOTE: A MINIMUM TWO (2) HOUR NOTIFICATION SHALL BE GIVEN BY THE CONTRACTOR FOR REQUESTED INSPECTIONS.
6. PROPER NOTIFICATION TO ALL REQUIRED AGENCIES MUST BE MADE WITHIN REQUIRED TIME PERIODS.
   a. NOTIFICATION TO DIG-SAFE (888-344-7233) MUST BE MADE 72 HOURS PRIOR TO THE START OF WORK.
   b. THE HOLDEN WATER DEPARTMENT (508-210-5550) MUST BE NOTIFIED 48 HOURS PRIOR TO THE START OF WORK FOR INFORMATION AND LOCATION MARKING OF WATER LINES.
7. THE CONTRACTOR IS RESPONSIBLE TO COMPLY WITH ALL APPLICABLE OSHA OPEN TRENCH SAFETY REQUIREMENTS. IT IS NOT THE TOWN'S RESPONSIBILITY TO INSPECT EACH SITE FOR COMPLIANCE.



SEWER TRENCH DETAIL

NOT TO SCALE



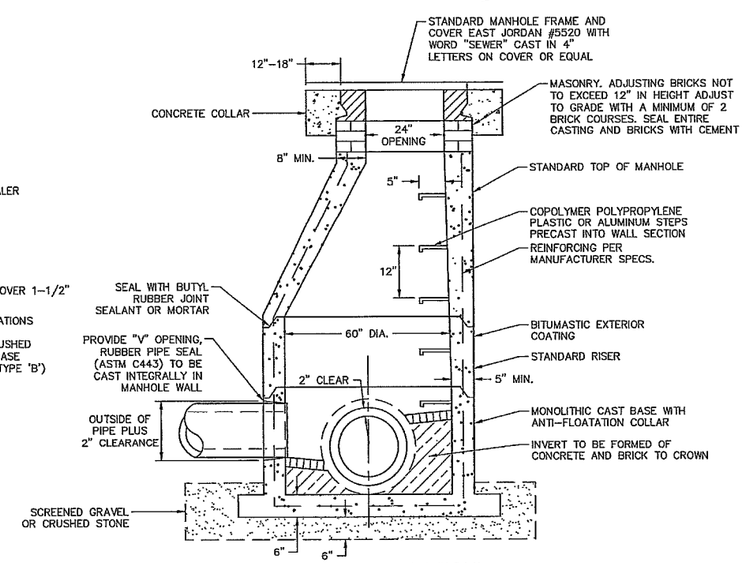
TRENCH WIDTH, W		
D DIAMETER OF PIPE	W UNSHEETED	W SHEETED
TO 12"	3'	4'
14" TO 24"	4'	5'
30" TO 36"	5'	6'

NOTES:

1. CONTRACTOR TO PROVIDE PAVEMENT PATCH TO MEET MassDOT AND/OR TOWN OF HOLDEN PUBLIC WORKS SPECIFICATIONS.
2. PAVEMENT TO BE MINIMUM 4" (TOWN ROAD) OR 7-1/2" (MassDOT) HOT MIX OR GREATER TO MATCH EXISTING FOR PERMANENT PATCH.
3. TEMPORARY PAVEMENT THICKNESS SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE MassDOT PERMIT ISSUED FOR THE PROJECT.

PAVEMENT PATCH DETAIL FOR TRENCH SECTIONS

NOT TO SCALE



SEWER MANHOLE DETAIL

NOT TO SCALE

REVISIONS

REV	DATE	COMMENT	BY
0	3/27/18	MAIN STREET & BOYDEN ROAD GRAVITY SEWER UPGRADE	BLM
1	4/27/18	RESPONSE TO PEER REVIEW COMMENTS	BLM
2	6/5/18	RESPONSE TO PEER REVIEW COMMENTS	BLM
3			

COMMONWEALTH OF MASSACHUSETTS
JESSE M. MORENO
No. 47315
REGISTERED PROFESSIONAL ENGINEER
6-5-18

Jesse M. Moreno - PE No.47315

THIS ENDORSEMENT MAKES NO DETERMINATION AS TO ZONING COMPLIANCE OR PLAN ACCURACY.

APPROVAL UNDER THE SUBDIVISION CONTROL LAW IS REQUIRED.

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AMENDED DEFINITIVE PLAN GREENWOOD II

LOCATED ON
UNION STREET
HOLDEN, MASSACHUSETTS

SCALE: 1" = 10'

OWNED BY & PREPARED FOR

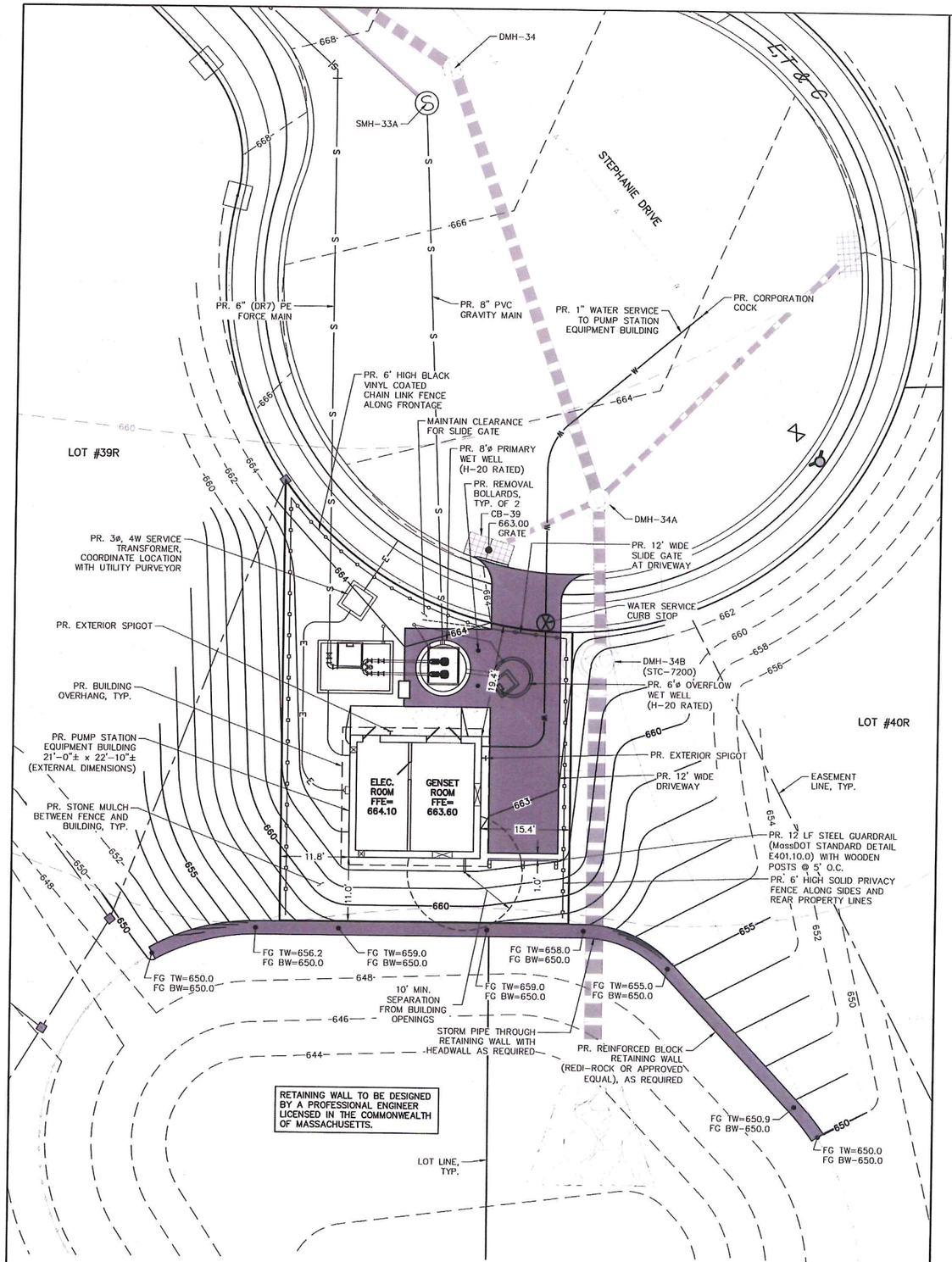
JACKSON WOODS INVESTMENTS, LLC.
87 MAIN STREET
RUTLAND, MA. 01543

ProTerra
DESIGN GROUP, LLC

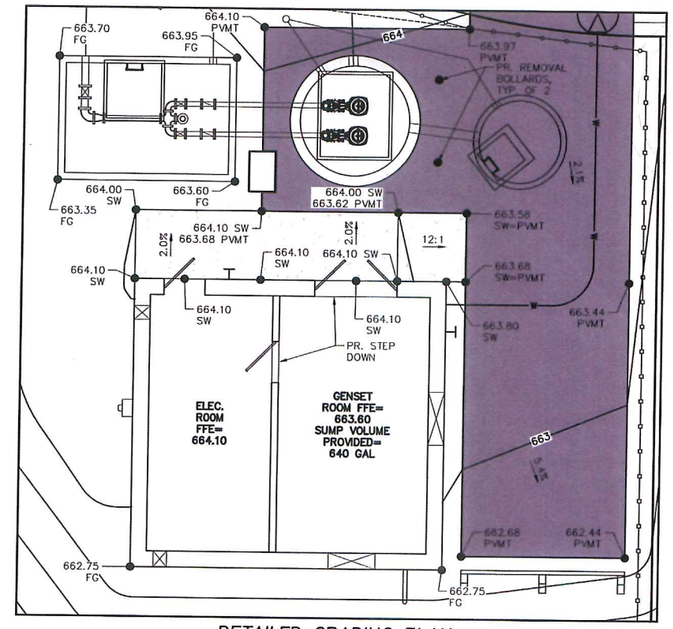
4 Bay Road, Bldg A,
Suite 200
Hadley, MA 01035

Ph: (413)320-4918

Date: March 27, 2018	SS-03
Drawn By: BLM	
Checked By: JMM	
Job #: 16-026	Sheet 3 of 3



PLAN
SCALE: 1"=10'



DETAILED GRADING PLAN
SCALE: 1"=5'

CW Sales Corporation
1-866-60-PUMPS

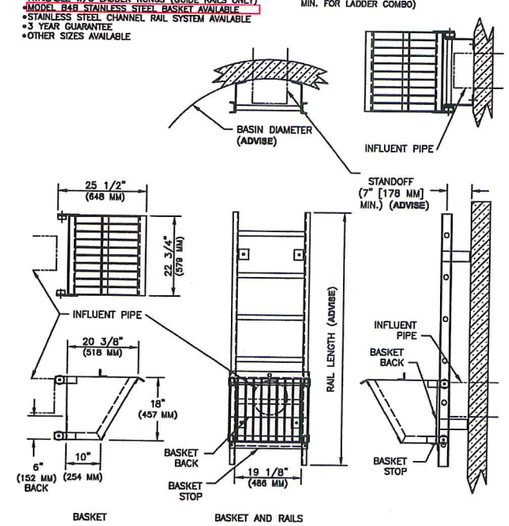
SERIES B1B TRASH BASKET

STANDARD FEATURES:

- ALL ALUMINUM BASKET AND RAILS
- SOLID ALUMINUM WHEELS AND STAINLESS STEEL AXLES
- HEAVY DUTY LADDER/GUIDERAIL COMBINATION in stainless steel
- 1 3/8" TYPE "D" RUNG WITH FLAT SLIP RESISTANT SURFACE
- BAR SCREEN STYLE BASKET
- AVAILABLE W/O LADDER RUNGS (GUIDE RAILS ONLY)
- MODEL B4B STAINLESS STEEL BASKET AVAILABLE
- STAINLESS STEEL CHANNEL RAIL SYSTEM AVAILABLE
- 3 YEAR GUARANTEE
- OTHER SIZES AVAILABLE

REQUIRED INFORMATION:

- BASIN DIAMETER
- RAIL LENGTH
- STANDOFF LENGTH (7" [178 MM] MIN. FOR LADDER COMBO)



REVISIONS

REV	DATE	COMMENT	BY
1	2/14/17	RESPONSE TO DPW COMMENTS	BLM
2	3/8/18	RESPONSE TO PEER REVIEW COMMENTS (COMBINED PUMP STATION)	BLM
3	4/27/18	RESPONSE TO PEER REVIEW COMMENTS	BLM
4	6/5/18	RESPONSE TO PEER REVIEW COMMENTS	BLM

COMMONWEALTH OF MASSACHUSETTS JESSE M. MORENO No. 47315 REGISTERED PROFESSIONAL ENGINEER 6-5-18

Jesse M. Moreno - PE No.47315

GENERAL NOTES:

1. SEE SHEET PS-02 FOR ADDITIONAL NOTES REGARDING THE PUMP STATION DESIGN AND CONSTRUCTION.
2. SEE SHEET PS-03 FOR ADDITIONAL NOTES REGARDING THE PUMP STATION BUILDING DESIGN AND CONSTRUCTION.
3. NO SANITARY SEWAGE FLOW SHOULD BE REDIRECTED FROM THE WINTHROP LANE (HIGHLAND AVE.) PUMP STATION TO THE PROPOSED STEPHANIE DRIVE PUMP STATION UNTIL THE STEPHANIE DRIVE PUMP STATION IS ONLINE AND HAS BEEN DEEMED FULLY OPERATIONAL BY THE TOWN.

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SCALE: 1" = 10'

OWNED BY & PREPARED FOR

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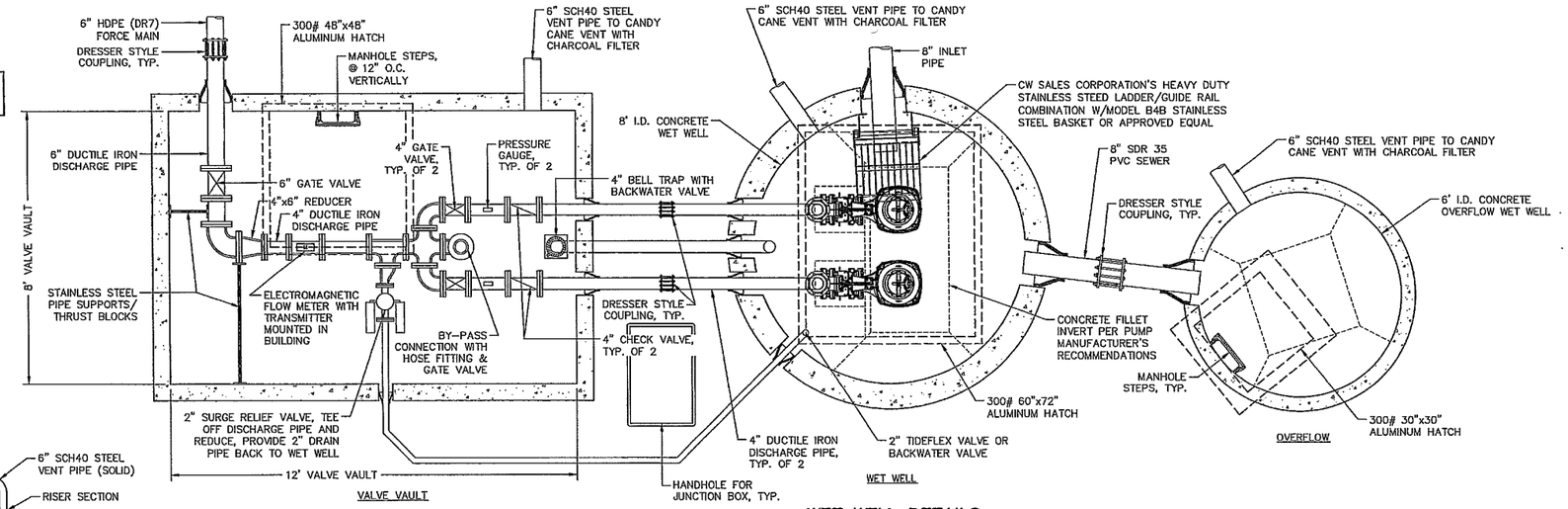
87 MAIN STREET
RUTLAND, MA. 01543

ProTerra DESIGN GROUP, LLC
4 Bay Road, Bldg A, Suite 200
Hadley, MA 01035
Ph: (413)320-4918

Date: October 21, 2016	PS-01
Drawn By: BLM	
Checked By: JMM	
Job #: 16-026	Sheet 1 of 3

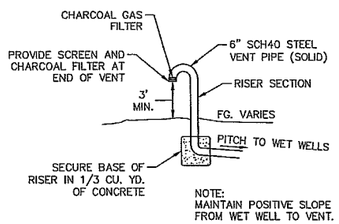
ALL INTERIOR FORCE MAIN TO BE DUCTILE IRON WITH MECHANICAL FITTINGS



WET WELL DETAILS

NOT TO SCALE

OUTSIDE OF WET WELLS & VALVE PIT SHALL BE COATED WITH BITUMASTIC SEALANT. INTERIOR OF WET WELL, OVERFLOW, & VALVE PIT SHALL BE COATED WITH AN APPROVED EPOXY FINISH (2 COATS)

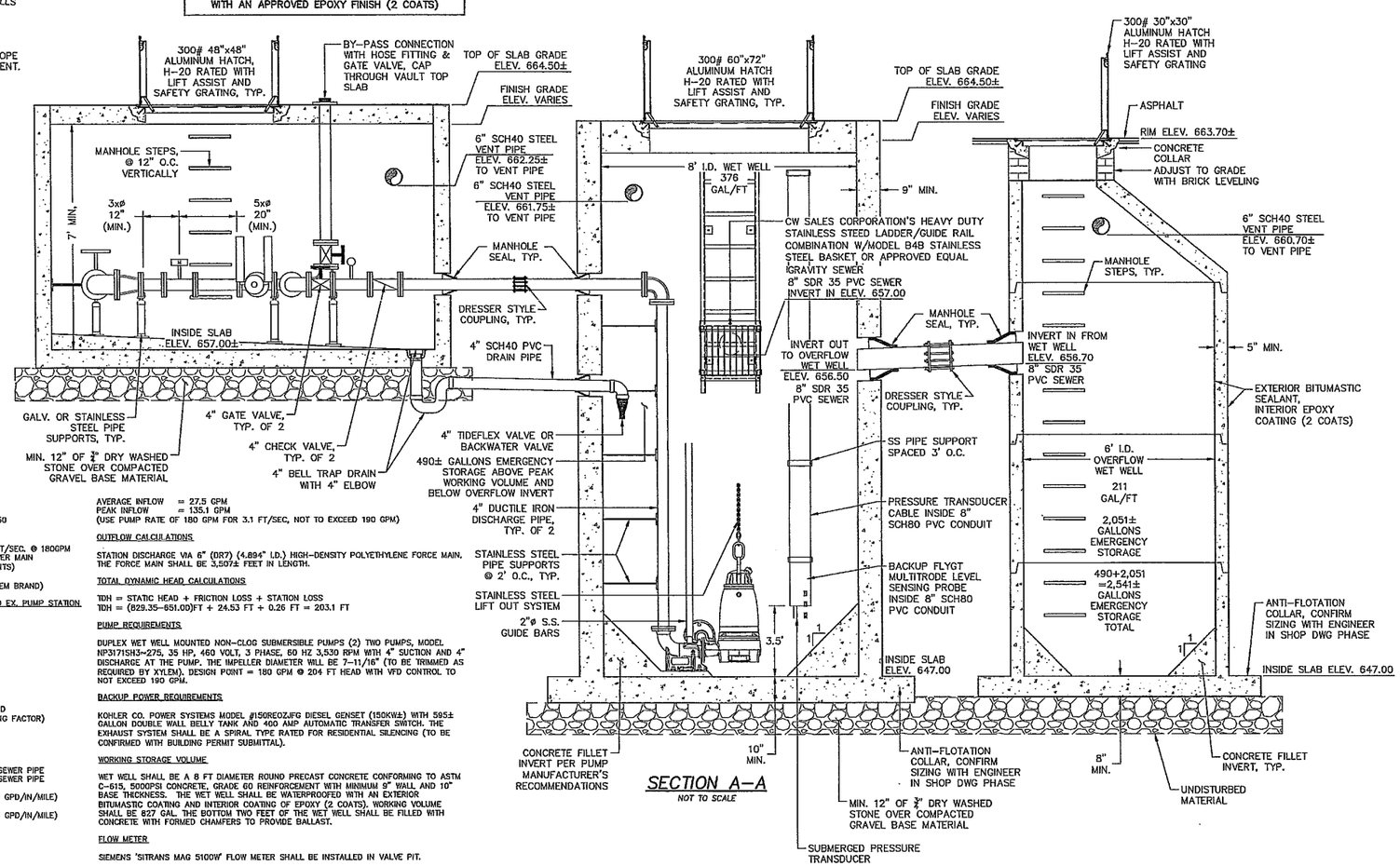


WET WELL VENT DETAIL

NOT TO SCALE

LEVEL & ELEVATION SCHEDULE	
HIGHWATER ALARM – BACKUP	656.50
HIGHWATER ALARM	656.20
LAG PUMP ON/ALARM	655.20
LEAD PUMP ON	653.20
PUMPS OFF	651.00
LOW WATER ALARM	650.00

PUMP SCHEDULE	
NO. OF PUMPS REQUIRED	2
TYPE	SUBMERSIBLE
DESIGN OPERATING CONDITION	180 GPM @ 203 TDH
MAX. MOTOR HP	35
MAX. MOTOR SPEED	3530 RPM
VARIABLE FREQUENCY DRIVE (VFD)	



SECTION A–A

NOT TO SCALE

DESIGN SUMMARY

DESIGN CRITERIA

6" (DR7) HIGH-DENSITY POLYETHYLENE FORCE MAIN @ 180GPM, C=150
= 0.65 FT/LOSS PER 100FT PM
VELOCITY IN FORCE MAIN = 3.1 FT/SEC.
(VFD) ON PUMP MOTOR TO PROVIDE MIN. 2.5 FT/SEC. TO MAX. 3.1 FT/SEC. @ 180GPM TO MEET CAPACITY CONSTRAINTS OF DOWNSTREAM GRAVITY SEWER MAIN
PEAKING FACTOR MAX. 24-HOUR = 5.6 (PER TOWN DPW REQUIREMENTS)
MAX. TIME TO FILL WET WELL = 30 MIN. (TR-16, PG 3-4)
MAX. PUMP CYCLES PER HOUR = 30 FOR 35HP PUMP (FLYGT A XYLEM BRAND)

INFLOW CALCULATIONS PR. GREENWOOD II DEFINITIVE SUBDIVISION AND EX. PUMP STATION @ WINTHROP LANE (HIGHLAND AVE.)

PROPOSED GREENWOOD II DEFINITIVE SUBDIVISION = 88 HOMES
INFLOW TO EXISTING HIGHLAND AVE. PUMP STATION = 74 HOMES

TOTAL TRIBUTARY LOTS FULL BUILD-OUT = 88 + 74 = 162 HOMES

DESIGN FLOW ESTIMATES FROM TOWN DPW REQUIREMENTS PER HOME

AVERAGE POPULATION PER HOME = 2.7 PERSONS/HOME

162 HOMES X 2.7 PERSONS/HOME X 77 GPD/PERSONS = 33,680 GPD
(NO PEAKING FACTOR)

33,680 GPD X 5.6 = 188,608 GPD PEAK FLOW

DESIGN FLOW I&I ESTIMATES FROM (TR-16, PG 2-2)

PROPOSED GREENWOOD II DEFINITIVE SUBDIVISION = 7,887 FT SEWER PIPE
INFLOW TO EXISTING HIGHLAND AVE. PUMP STATION = 5,282 FT SEWER PIPE

I&I GREENWOOD II = (7,887 FT X 1 MILE/5,280 FT) X 8 IN X (250 GPD/IN/MILE)
= 2,988 GPD
I&I EX. PUMP STA = (5,282 FT X 1 MILE/5,280 FT) X 8 IN X (375 GPD/IN/MILE)
= 3,001 GPD

TOTAL I&I = 2,988 GPD + 3,001 GPD = 5,989 GPD

TOTAL DESIGN FLOWS

TOTAL AVERAGE FLOW WITH I&I = 33,680 GPD + 5,989 GPD = 39,669 GPD (AVG)
TOTAL PEAK FLOW WITH I&I = 188,608 GPD + 5,989 GPD = 194,597 GPD (PEAK)

AVERAGE INFLOW = 27.5 GPM
PEAK INFLOW = 135.1 GPM
(USE PUMP RATE OF 180 GPM FOR 3.1 FT/SEC, NOT TO EXCEED 190 GPM)

OUTFLOW CALCULATIONS

STATION DISCHARGE VIA 6" (DR7) (4.894" I.D.) HIGH-DENSITY POLYETHYLENE FORCE MAIN. THE FORCE MAIN SHALL BE 3,507± FEET IN LENGTH.

TOTAL DYNAMIC HEAD CALCULATIONS

TDH = STATIC HEAD + FRICTION LOSS + STATION LOSS
TDH = (829.35–651.00)FT + 24.53 FT + 0.26 FT = 203.1 FT

PUMP REQUIREMENTS

DUPLEX WET WELL MOUNTED NON-CLOG SUBMERSIBLE PUMPS (2) TWO PUMPS, MODEL NP3171SH3~275, 35 HP, 460 VOLT, 3 PHASE, 60 HZ 3,530 RPM WITH 4" SUCTION AND 4" DISCHARGE AT THE PUMP. THE IMPELLER DIAMETER WILL BE 7-11/16" (TO BE TRIMMED AS REQUIRED BY XYLEM). DESIGN POINT = 180 GPM @ 204 FT HEAD WITH VFD CONTROL TO NOT EXCEED 190 GPM.

BACKUP POWER REQUIREMENTS

KOHLER CO. POWER SYSTEMS MODEL #150REOZJFG DIESEL GENSET (150KW±) WITH 595± GALLON DOUBLE WALL BELLY TANK AND 400 AMP AUTOMATIC TRANSFER SWITCH. THE EXHAUST SYSTEM SHALL BE A SPIRAL TYPE RATED FOR RESIDENTIAL SILENCING (TO BE CONFIRMED WITH BUILDING PERMIT SUBMITTAL).

WORKING STORAGE VOLUME

WET WELL SHALL BE A 8 FT DIAMETER ROUND PRECAST CONCRETE CONFORMING TO ASTM C-615, 5000PSI CONCRETE, GRADE 60 REINFORCEMENT WITH MINIMUM 9" WALL AND 10" BASE THICKNESS. THE WET WELL SHALL BE WATERPROOFED WITH AN EXTERIOR BITUMASTIC COATING AND INTERIOR COATING OF EPOXY (2 COATS). WORKING VOLUME SHALL BE 827 GAL. THE BOTTOM TWO FEET OF THE WET WELL SHALL BE FILLED WITH CONCRETE WITH FORMED CHAMFERS TO PROVIDE BALLAST.

FLOW METER

SIEMENS 'SITRANS MAG 5100W' FLOW METER SHALL BE INSTALLED IN VALVE PIT.

SURGE RELIEF VALVE

2" 625 OR 2" 626 SEWAGE SURGE RELIEF VALVE BY G.A. INDUSTRIES, INC. OR APPROVED EQUAL SHALL BE INSTALLED IN VALVE PIT.

REVISIONS

REV	DATE	COMMENT	BY
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COMMONWEALTH OF MASSACHUSETTS
JESSE M. MORENO
No. 47315
REGISTERED PROFESSIONAL ENGINEER
6-5-18

Jesse M. Moreno - PE No.47315

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AMENDED DEFINITIVE PLAN GREENWOOD II

LOCATED ON
UNION STREET
HOLDEN, MASSACHUSETTS

SCALE: 1" = 10'

OWNED BY & PREPARED FOR

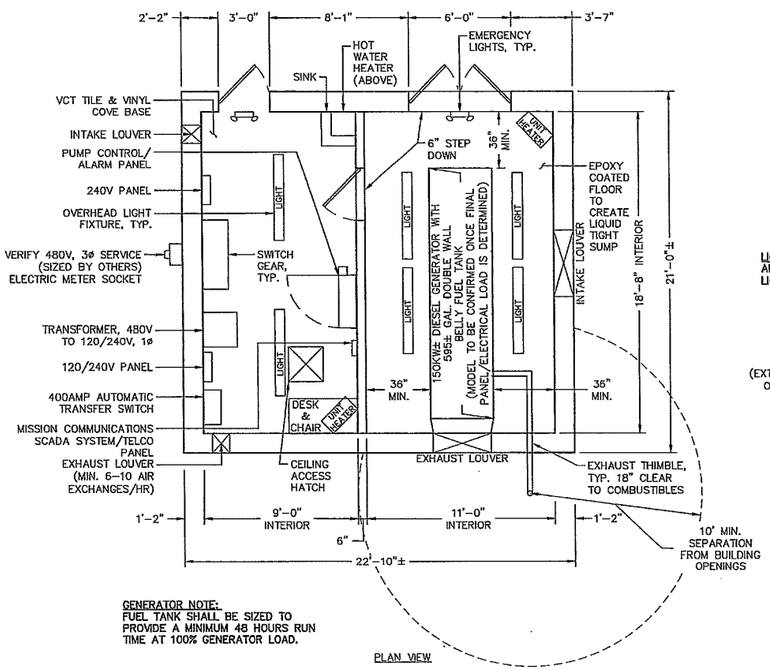
JACKSON WOODS INVESTMENTS, LLC.
87 MAIN STREET
RUTLAND, MA. 01543

ProTerra
DESIGN GROUP, LLC
4 Bay Road, Bldg A, Suite 200
Hadley, MA 01035
Ph:(413)320-4918

Date: October 21, 2016
Drawn By: BLM
Checked By: JMM
Job #: 16-026

PS-02

Sheet 2 of 3



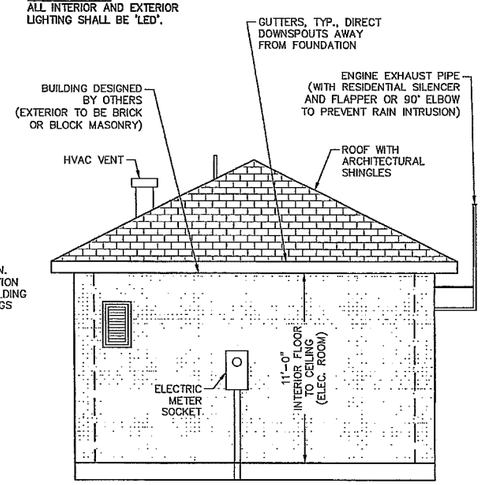
GENERATOR NOTE:
FUEL TANK SHALL BE SIZED TO PROVIDE A MINIMUM 48 HOURS RUN TIME AT 100% GENERATOR LOAD.

PLAN VIEW

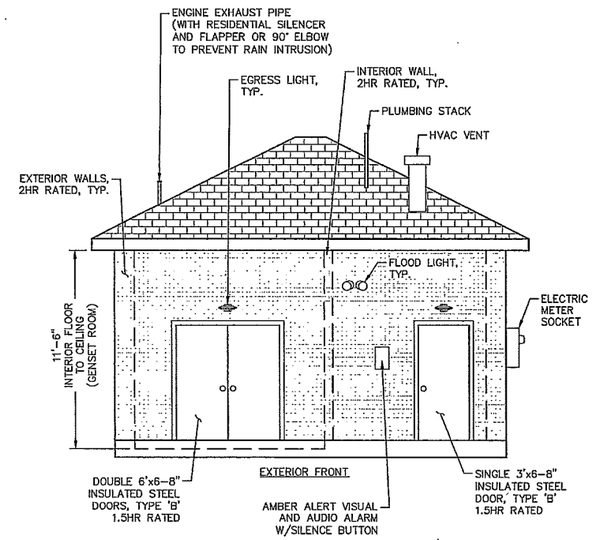
PUMP STATION EQUIPMENT BUILDING (SCHEMATIC)

NOT TO SCALE

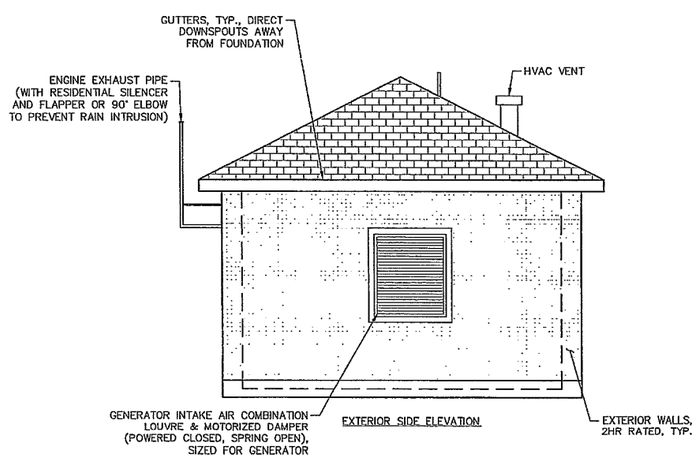
LIGHTING NOTE:
ALL INTERIOR AND EXTERIOR LIGHTING SHALL BE 'LED'.



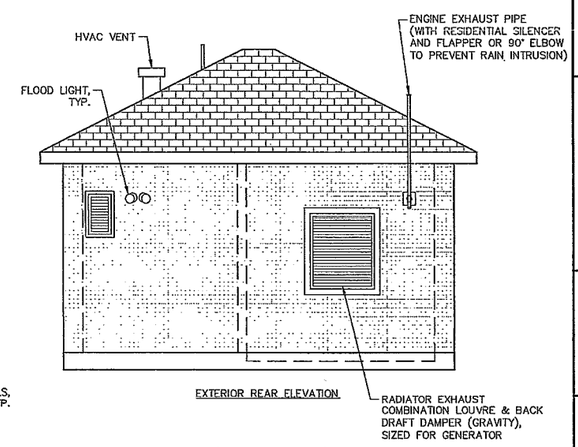
EXTERIOR SIDE ELEVATION



EXTERIOR FRONT



EXTERIOR SIDE ELEVATION



EXTERIOR REAR ELEVATION

PUMP STATION EQUIPMENT BUILDING ELEVATIONS (SCHEMATIC)

NOT TO SCALE

GENERAL NOTES:

1. THE PURPOSE OF THIS PUMP STATION DESIGN IS TO ADDRESS THE COMMENTS CONTAINED WITH THE LETTER DATED JULY 19, 2016 AND ALL SUBSEQUENT COMMENT LETTERS FROM THE TOWN OF HOLDEN AND/OR ITS ENGINEERING PEER REVIEWER.
2. THESE PLANS ARE SCHEMATIC IN NATURE. THE CONTRACTOR IS RESPONSIBLE TO SUBMIT SHOP DRAWINGS ON THE BUILDING, PUMP STATION, HVAC, ELECTRIC, PLUMBING, AND ALL COMPONENTS SHOWN WITHIN THESE PLANS TO OBTAIN A BUILDING PERMIT.
3. ALL DIMENSIONS TO BE CONFIRMED THROUGH SUBMITTAL SHOP DRAWINGS AND CATALOG CUTS PROVIDED TO THE APPROVING AUTHORITY AND ENGINEER PRIOR TO CONSTRUCTION.
4. THE DESIGN AND DETAILS OF THE PUMPS AND SPECIFICATIONS RELATED TO THE CUSTOM SEWER DUPLEX PUMP STATION IS THE PROPERTY OF FLYGT A XYLEM BRAND.
5. THE DIESEL GENSET AND THE DETAILS PROVIDED ARE THE PROPERTY OF KOHLER CO. POWER SYSTEMS WHO RESERVES THE RIGHT TO CHANGE DIMENSIONS AND SPECIFICATIONS WITHOUT NOTICE. CONSULT FACTORY FOR CERTIFIED DIMENSIONS.
6. THE CONTRACTOR SHALL LOAM AND SEED ALL DISTURBED AREAS UNLESS OTHERWISE NOTED.
7. CONTRACTOR SHALL COORDINATE WITH AND PAY LOCAL UTILITY COMPANIES FOR INSTALLATION OF ALL REQUIRED UTILITIES, SERVICES, METERS, ETC. TO THE PUMP STATION SITE.
8. LIMIT OF WORK FOR PUMP STATION SHALL INCLUDE ALL WORK SHOWN ON THIS PLAN AND WORK ON OTHER SHEETS AS REFERENCED ON THIS PLAN, WITH THE EXCEPTION OF SEWER PIPELINE ITEMS. THE LIMIT OF WORK FOR THE FORCE MAIN SHALL BE THE OUTSIDE FACE OF THE PUMP CHAMBER. THE LIMIT OF WORK FOR THE GRAVITY SEWER SHALL BE THE OUTSIDE FACE OF THE WET WELL.
9. CLEARING OF TREES AND GROUND COVER BY THE CONTRACTOR SHALL BE LIMITED AS MUCH AS POSSIBLE.
10. HAY BALES AND SILT FENCE REQUIRED AT LIMITS OF WORK AND AS DIRECTED BY THE ENGINEER.
11. CONTRACTOR SHALL NOT STOCKPILE MATERIALS OUTSIDE OF THE LIMIT OF WORK AREA UNLESS OTHERWISE DIRECTED.
12. FOR CIVIL, PLUMBING, HEATING AND VENTILATING, ELECTRICAL, MECHANICAL, INSTRUMENTATION AND OTHER DETAILS, SEE APPLICABLE SHEETS OR REPORTS (BY OTHERS).
13. THE ENTIRE WET WELL, VALVE PIT, AND OVERFLOW WET WELL SHALL BE DESIGNED FOR H-20 LOADING.
14. SEE SITE PLAN FOR STEPHANIE DRIVE PUMP STATION ON SHEET PS-01 FOR ORIENTATION OF PUMP STATION STRUCTURES.
15. SELECT BACKFILL IS REQUIRED WITH LARGEST STONE DIAMETER NOT EXCEEDING 3".
16. GAS TIGHT CONDUIT SEALS REQUIRED AT ALL WET WELL AND PUMP CHAMBER CONDUIT ENTRANCES.
17. DRESSER STYLE COUPLINGS ARE REQUIRED BETWEEN STRUCTURES TO ALLOW DIFFERENTIAL SETTLEMENT.
18. THE FOUNDATION AND REBAR SHALL BE DESIGNED AND STAMPED BY A MASSACHUSETTS REGISTERED PROFESSIONAL STRUCTURAL ENGINEER AND WILL BE SUBJECT TO REVIEW BY A THIRD PARTY REVIEWER. CONCRETE MIX DESIGN(S) SHALL BE SUBJECT TO REVIEW BY A THIRD PARTY REVIEWER.
19. THE DESIGN OF THE STRUCTURE AND ANY ELEMENTS RELATED TO THE STRUCTURE OF THE BUILDING SHALL BE DESIGNED AND STAMPED BY A MASSACHUSETTS REGISTERED PROFESSIONAL STRUCTURAL ENGINEER OR MASSACHUSETTS LICENSED ARCHITECT, AS APPLICABLE, AND WILL BE SUBJECT TO REVIEW BY A THIRD PARTY REVIEWER.
20. THE DESIGN OF THE ROOF STRUCTURE SHALL BE DESIGNED AND STAMPED BY A MASSACHUSETTS REGISTERED PROFESSIONAL STRUCTURAL ENGINEER OR QUALIFIED DESIGNER AND WILL BE SUBJECT TO REVIEW BY A THIRD PARTY REVIEWER.
21. ROOF SHINGLES SHALL BE STANDARD, SELF-SEALING FIBERGLASS ASPHALT SHINGLES WITH A MINIMUM 25-YEAR WARRANTY.
22. DOOR SIGNS SHALL READ "GENERATOR ROOM" AND "CONTROL ROOM".
23. THE SIGNS SHALL BE INSTALLED ON BOTH SIDES OF THE INTERIOR DOOR AND ON THE EXTERIOR SIDE OF THE EXTERIOR DOORS INTO THE RESPECTIVE ROOMS.
24. OUTSIDE FAUCETS SHALL BE VACUUM BREAKER, FROST PROOF, ¼ TURN.
25. THE DESIGN OF ANY PLUMBING AND HVAC SYSTEMS SHALL BE DESIGNED AND STAMPED BY A MASSACHUSETTS REGISTERED PROFESSIONAL MECHANICAL ENGINEER OR QUALIFIED DESIGNER AND WILL BE SUBJECT TO REVIEW BY A THIRD PARTY REVIEWER.
26. ANY ELECTRICAL CABINETS INSIDE THE PUMP STATION BUILDING SHALL BE NEMA TYPE 1 OR TYPE 2, UNLESS NOTED ON THE PLANS OTHERWISE.
27. ANY MISCELLANEOUS ELECTRICAL EQUIPMENT INCLUDING BUT NOT LIMITED TO BREAKERS, FUSES, TERMINALS, ETC. SHALL BE MANUFACTURED BY GENERAL ELECTRIC, WESTINGHOUSE, SEIMANS-ITE, CROUSE HINDS, SQUARE D, ALLEN-BRADLEY OR APPROVED EQUIVALENT.
28. THE DESIGN OF ANY ELECTRICAL SYSTEMS SHALL BE DESIGNED AND STAMPED BY A MASSACHUSETTS REGISTERED PROFESSIONAL ELECTRICAL ENGINEER AND WILL BE SUBJECT TO REVIEW BY A THIRD PARTY REVIEWER.

REVISIONS

REV	DATE	COMMENT	BY
2	3/6/18	RESPONSE TO PEER REVIEW COMMENTS (COMBINED PUMP STATION)	BLM
3	4/27/18	RESPONSE TO PEER REVIEW COMMENTS	BLM
4	6/5/18	RESPONSE TO PEER REVIEW COMMENTS	BLM
5	7/27/18	NOTES PER DPW COMMENTS	BLM

COMMONWEALTH OF MASSACHUSETTS
JESSE M. MORENO
CIVIL
No. 47315
REGISTERED PROFESSIONAL ENGINEER
7-27-18

Jesse M. Moreno - PE No.47315

THIS ENDORSEMENT MAKES NO DETERMINATION AS TO ZONING COMPLIANCE OR PLAN ACCURACY.

APPROVAL UNDER THE SUBDIVISION CONTROL LAW IS REQUIRED.

HOLDEN PLANNING BOARD:

Date: _____

Certificate of No Appeal
Decision of the Town of Holden Planning Board approving this plan was recorded in the office of the Holden Town Clerk on
Date: _____
And no notice of appeal there from received by the Holden Town Clerk during the 20 days following.

Town Clerk _____ Date _____

AMENDED DEFINITIVE PLAN GREENWOOD II

LOCATED ON
UNION STREET
HOLDEN, MASSACHUSETTS

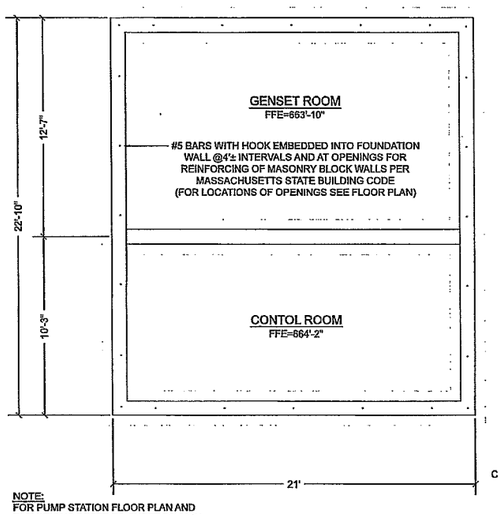
SCALE: NOT TO SCALE

OWNED BY & PREPARED FOR

JACKSON WOODS INVESTMENTS, LLC.
87 MAIN STREET
RUTLAND, MA. 01543

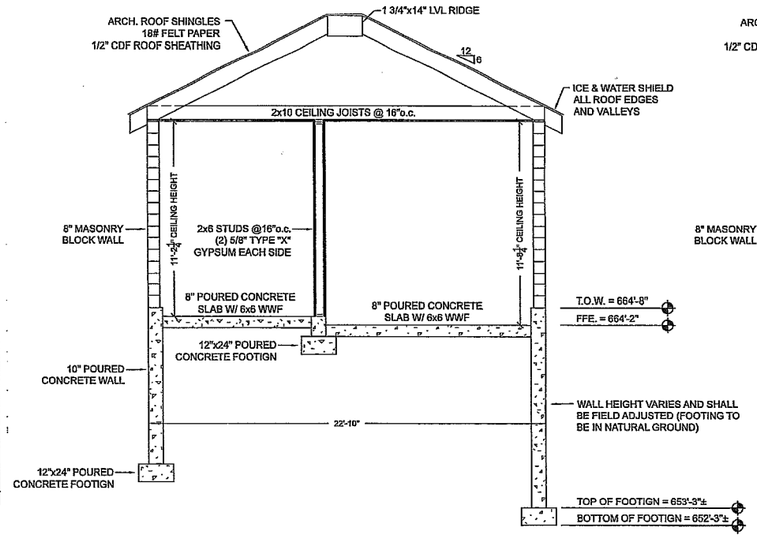
ProTerra
DESIGN GROUP, LLC
4 Bay Road, Bldg A, Suite 200
Hadley, MA 01035
Ph:(413)320-4918

Date: October 21, 2016	PS-03
Drawn By: BLM	
Checked By: JMM	
Job #: 16-026	Sheet 3 of 3

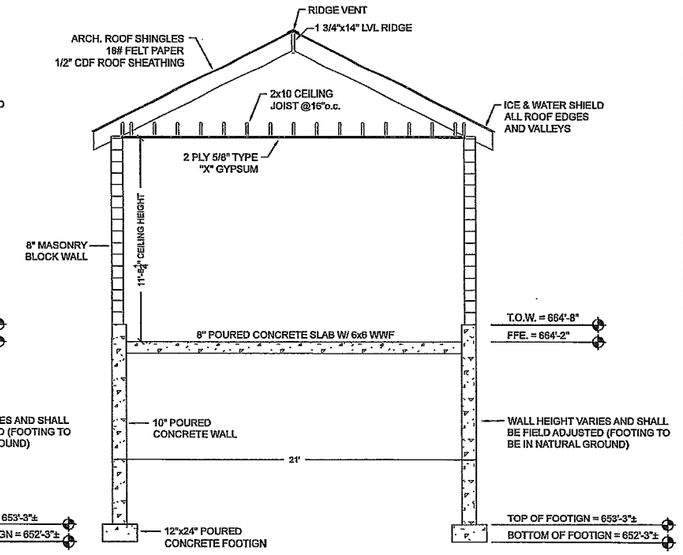


NOTE:
FOR PUMP STATION FLOOR PLAN AND ELEVATIONS REFER TO SHEET PS-03 IN PLANS BY PROTERRA

Foundation Plan
(SCALE: 1/4"=1'-0")



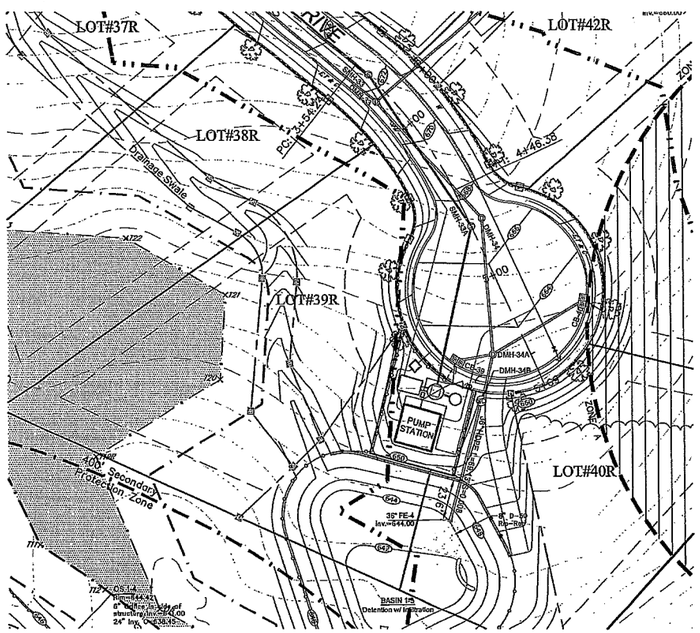
Section Through Pump Station
(SCALE: 1/4"=1'-0")



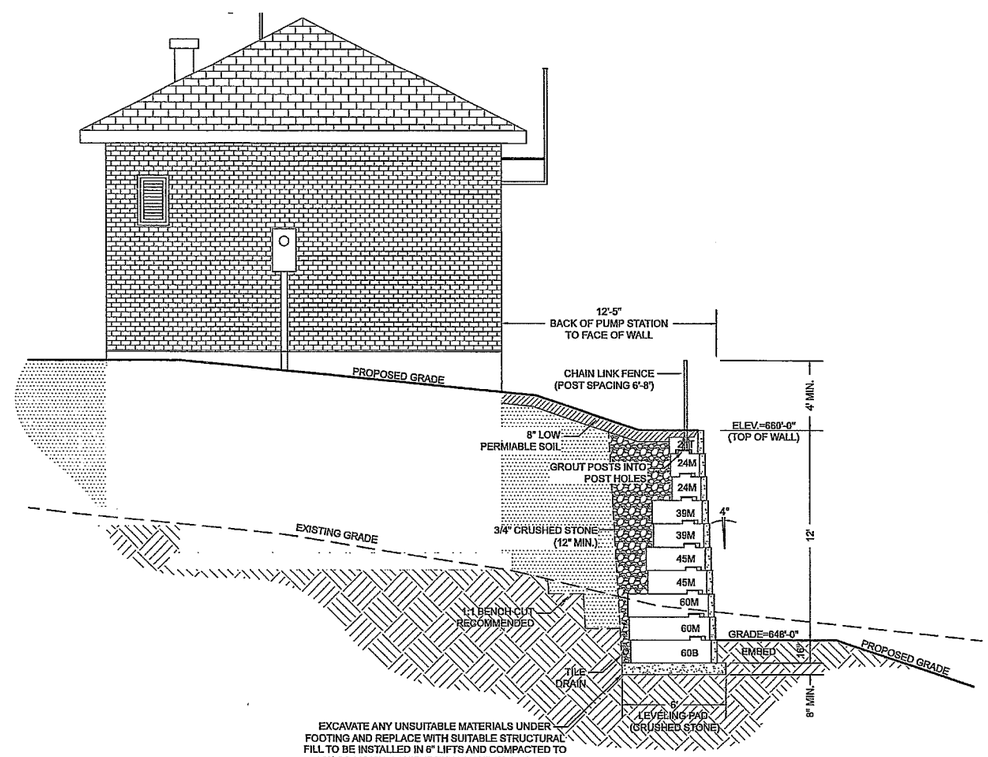
Section Through Pump Station
(SCALE: 1/4"=1'-0")

FOUNDATION NOTES:

1.) ALL FOOTINGS SHALL BE PLACED ON UNDISTURBED SOIL HAVING A MINIMUM OF 3000 LBS. PER S.F. BEARING CAPACITY.
2.) NO FOOTING SHALL BE PLACED IN WATER OR ON FROZEN SOIL.
3.) ALL EXTERIOR FOOTINGS SHALL BE A MINIMUM OF 4'-0" BELOW FINISHED GRADE.
4.) A MINIMUM OF 6" COMPACTED GRAVEL OR STONE SHALL BE PLACED UNDER ALL POURED CONCRETE SLABS.
5.) ALL POURED CONCRETE SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 4000 LBS. PER SQUARE INCH.
6.) ALL POURED CONCRETE FOUNDATIONS SHALL BE IN ACCORDANCE WITH MASSACHUSETTS STATE BUILDING CODE 780 CMR 5401-5408.
7.) DO NOT BACKFILL AGAINST WALL UNTIL CONCRETE HAS REACHED ITS DESIGN STRENGTH AND WALLS ARE ADEQUATELY BRACED.
8.) WATERPROOFING IS TO PLACED IN STRICT ACCORDANCE WITH MANUFACTURERS SPECIFICATIONS.
9.) FOOTINGS PLACED ON FILL TO BE THOROUGHLY COMPACTED TO 95% PROCTOR IN 6" LIFTS.



Site Plan
(SCALE: 1"=40')



Section Through Pump Station And Retaining Wall
(SCALE: 1/4"=1'-0")

REVISIONS

REV	DATE	COMMENT	BY
1			
2			
3			
4			

811 DigSafe MA-ME-NH-RI-VT
CONTRACTOR TO VERIFY ACTUAL LOCATION OF EXISTING UTILITY SERVICES IN THE FIELD PRIOR TO CONSTRUCTION.

COMMONWEALTH OF MASSACHUSETTS — JAMES B. KALLOCH — CIVIL — No. 24532 — REGISTERED PROFESSIONAL ENGINEER

James B. Kalloch - PE No.24532

THIS ENDORSEMENT MAKES NO DETERMINATION AS TO ZONING COMPLIANCE OR PLAN ACCURACY.

APPROVAL UNDER THE SUBDIVISION CONTROL LAW IS REQUIRED.

HOLDEN PLANNING BOARD:

Date: _____

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GREENWOOD II STEPHANIE DRIVE PUMP STATION AND RETAINING WALL DETAILS

LOCATED ON
UNION STREET
HOLDEN, MASSACHUSETTS

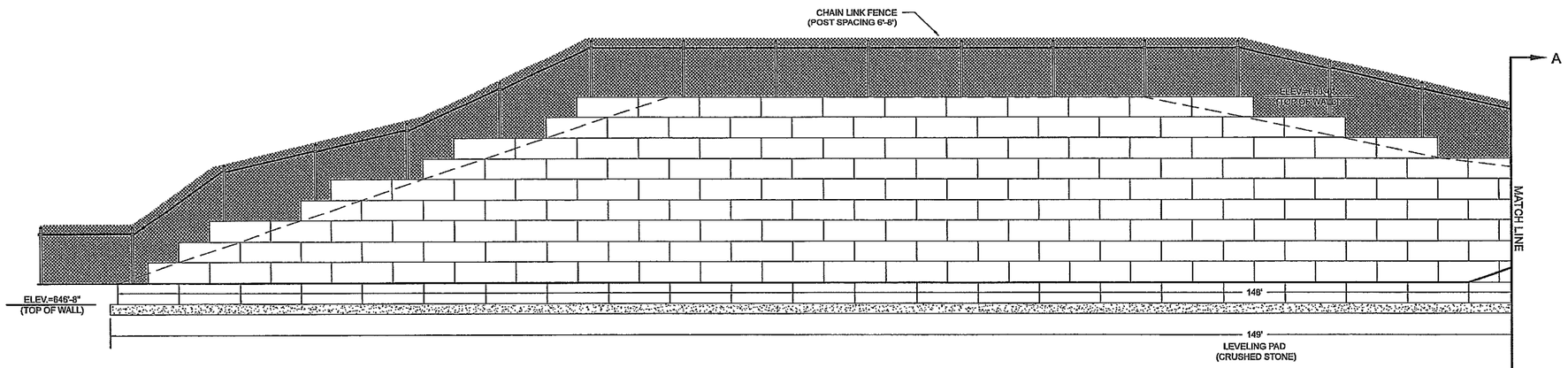
SCALE: AS NOTED

OWNED BY & PREPARED FOR

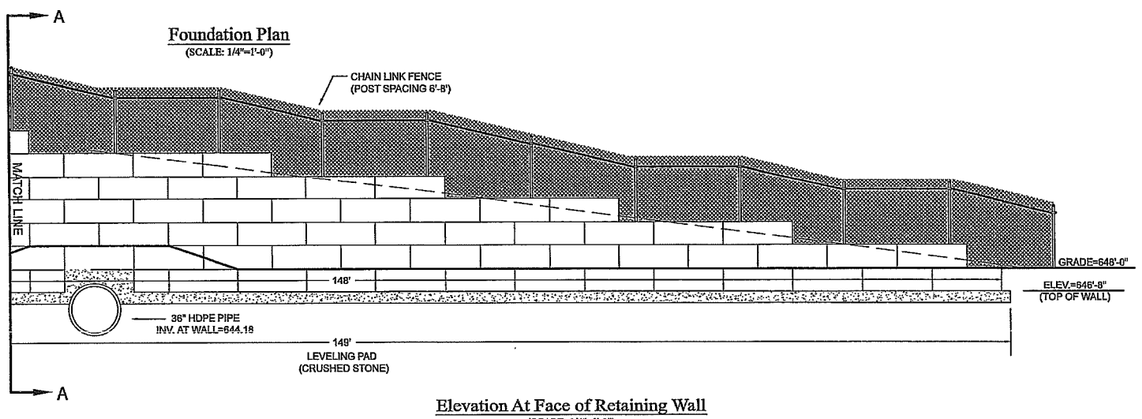
JACKSON WOODS INVESTMENTS, LLC.
87 MAIN STREET
RUTLAND, MA. 01543

New England Environmental Design, LLC
Environmental Consultants ■ Civil Engineering Consultants
Land Surveying Consultants
P.O. Box 376 Rutland, MA 01543
(508) 829-7222 Ph (508) 829-7522 Fax

Date: June 11, 2018	RW1
Drawn By: RMG	
Checked By: JBK	
Job #: 907-13	Sheet 1 of 2

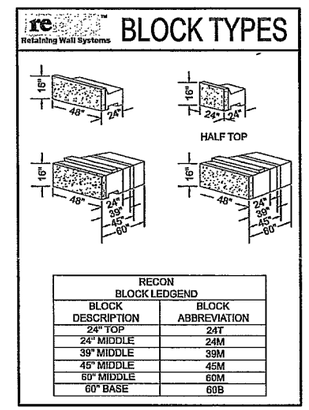


Elevation At Face of Retaining Wall
(SCALE: 1/4"=1'-0")



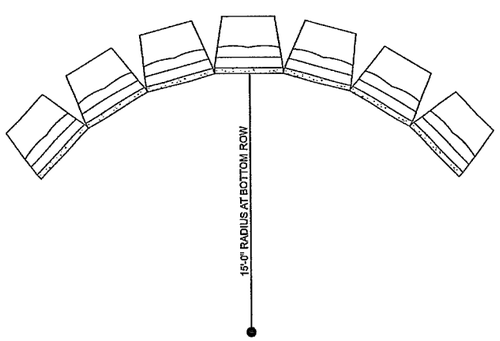
Foundation Plan
(SCALE: 1/4"=1'-0")

Elevation At Face of Retaining Wall
(SCALE: 1/4"=1'-0")



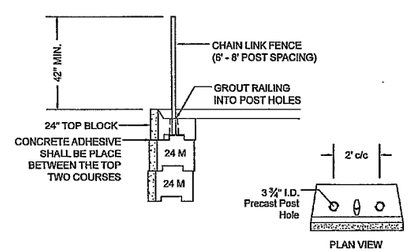
RECON BLOCK LEDGEND	
BLOCK DESCRIPTION	BLOCK ABBREVIATION
24" TOP	24T
24" MIDDLE	24M
39" MIDDLE	39M
45" MIDDLE	45M
60" MIDDLE	60M
60" BASE	60B

THE MINIMUM RADIUS ON THE BASE ROW OF A SINGLE COURSE WALL IS 15'-0". SEE CHART FOR MINIMUM RADIUS OF THE TOP ROW FOR VARYING WALL HEIGHTS.



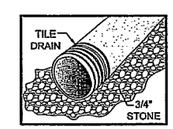
Minimum Inside Radius Detail
(NOT TO SCALE)

MINIMUM RADIUS TABLE CONCAVE / INSIDE CURVE		
WALL HEIGHT	NUMBER OF ROWS OF BLOCK	MINIMUM RADIUS TOP ROW
2'-8"	2	15'-2"
4'-0"	3	15'-4"
5'-4"	4	15'-6"
6'-8"	5	15'-8"
8'-0"	6	15'-10"
9'-4"	7	16'-0"
10'-8"	8	16'-2"
12'-0"	9	16'-4"
NOTE: THE MINIMUM BASE ROW RADIUS FOR A CONCAVE / INSIDE CURVE USING THE FULL BLOCK SHALL BE NO SMALLER THAN 15'-0" FOR A SINGLE COURSE WALL. THE RADIUS FOR EACH SUCCESSIVE ROW WILL INCREASE BY 2" PER COURSE OF BLOCK ADDED TO ACCOUNT FOR SETBACK. SEE BLOCK SPECIFICATION AND INSTALLATION INSTRUCTIONS FOR ADDITIONAL DETAILS.		



NOTE:
1. WHEN THE FENCE POST IS PLACED IN OR ON TOP OF THE TOP BLOCK, EACH TOP BLOCK SHOULD BE ADHERED TO THE BLOCK BENEATH IT. (PL PREMIUM IS THE RECOMMENDED CONCRETE ADHESIVE)
2. DETAIL DOES NOT APPLY TO PRIVACY FENCING OR OTHER APPLICATIONS WHERE WIND LOAD WOULD NEED TO BE TAKEN INTO ACCOUNT.

Fence Attachment Detail
(NOT TO SCALE)



Tile Drain Detail
(NOT TO SCALE)

REVISIONS

REV	DATE	COMMENT	BY
1			
2			
3			
4			

811 DigSafe MA-ME-NH-RI-VT
CONTRACTOR TO VERIFY ACTUAL LOCATION OF EXISTING UTILITY SERVICES IN THE FIELD PRIOR TO CONSTRUCTION.

COMMONWEALTH OF MASSACHUSETTS
JAMES B. KALLOCH
CIVIL
No. 24532
REGISTERED PROFESSIONAL ENGINEER

James B. Kalloch - PE No.24532

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Town Clerk Date

GREENWOOD II STEPHANIE DRIVE PUMP STATION AND RETAINING WALL DETAILS

LOCATED ON
UNION STREET
HOLDEN, MASSACHUSETTS

SCALE: AS NOTED

OWNED BY & PREPARED FOR

JACKSON WOODS INVESTMENTS, LLC.
87 MAIN STREET
RUTLAND, MA. 01543

New England Environmental Design, LLC
Environmental Consultants ■ Civil Engineering Consultants
Land Surveying Consultants
P.O. Box 376 Rutland, MA 01543
(508) 829-7222 Ph (508) 829-7522 Fax

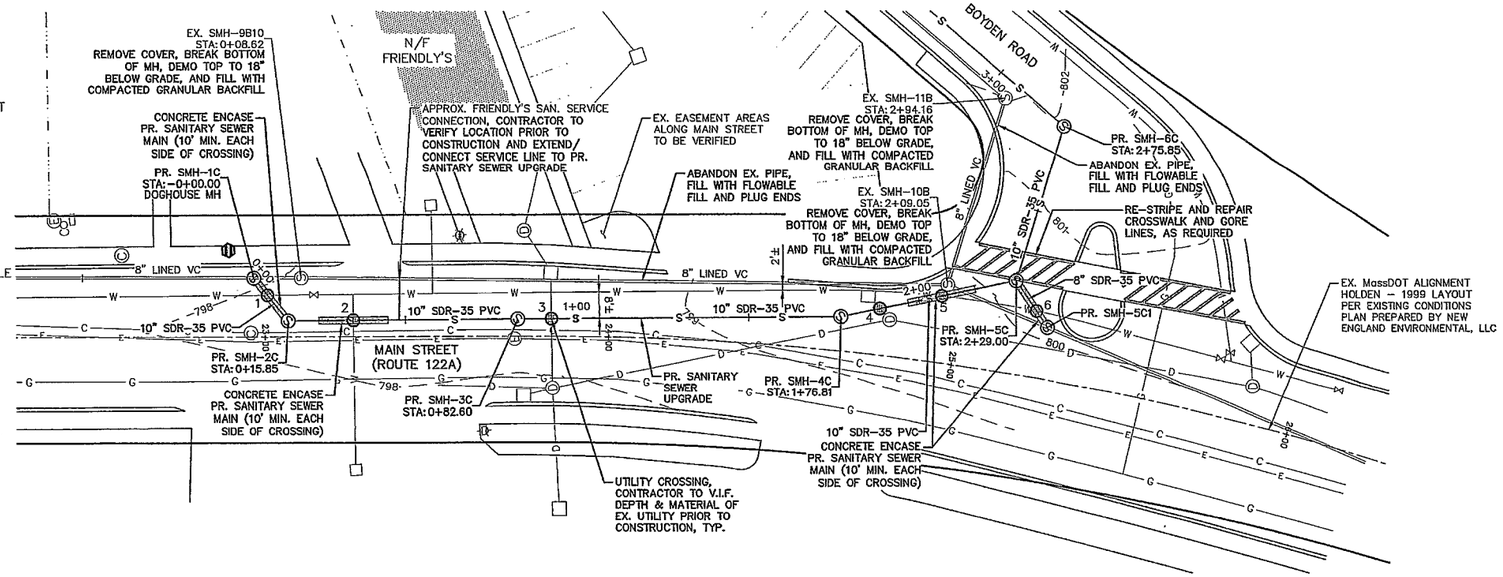
Date: June 11, 2018
Drawn By: RMG
Checked By: JBK
Job #: 907-13

RW2

Sheet 2 of 2

LEGEND

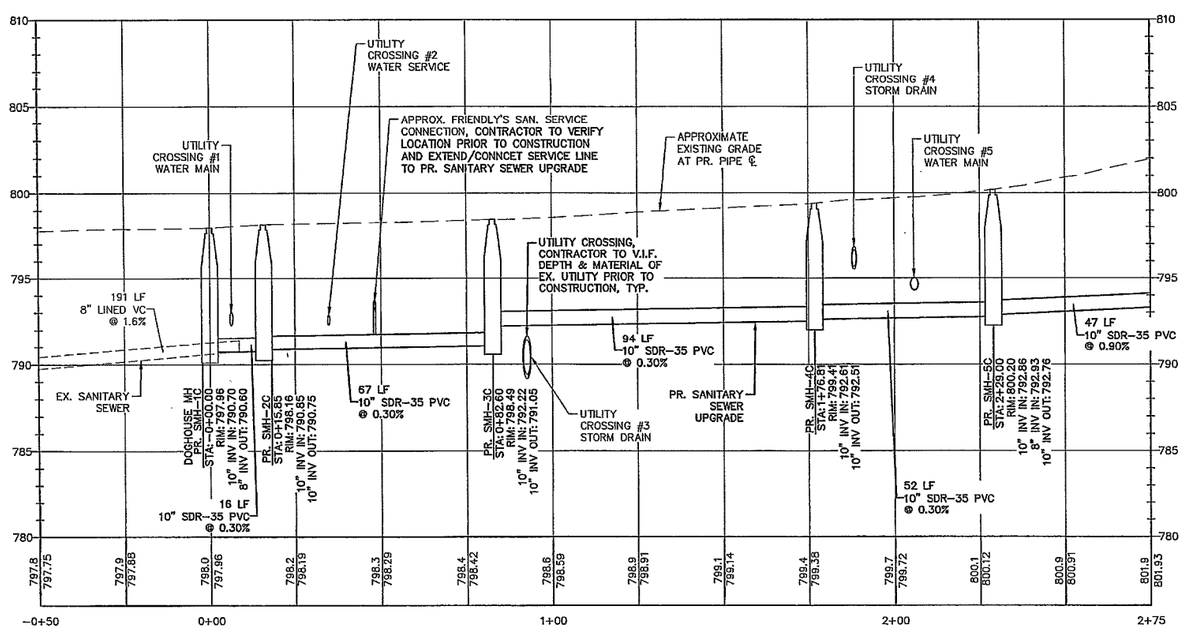
C	COMMUNICATION CONDUIT
D	DRAINAGE PIPE
E	ELECTRIC CONDUIT
G	GAS PIPE
S	SANITARY PIPE
W	WATER PIPE
Ⓒ	COMMUNICATION MANHOLE
Ⓓ	DRAINAGE MANHOLE
□	DRAINAGE INLET
Ⓔ	ELECTRIC MANHOLE
Ⓢ	SANITARY MANHOLE
⋈	WATER VALVE
	CONCRETE ENCASEMENT
1	UTILITY CROSSING
EX.	EXISTING
PR.	PROPOSED
V.I.F.	VERIFY IN FIELD



PLAN

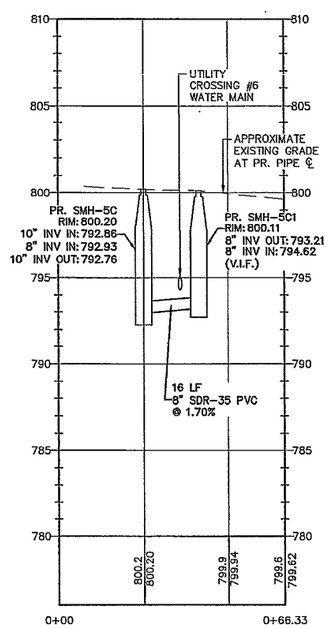
SCALE: 1"=20'

IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO FIELD VERIFY BY TEST PIT ALL UTILITY INVERTS AND SERVICE CONNECTIONS PRIOR TO CONSTRUCTION. ALL DISCREPANCIES SHALL BE REPORTED TO THE ENGINEER.



PROFILE

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



SERVICE CONNECTION PROFILE

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

REVISIONS

REV	DATE	COMMENT	BY
0	3/27/18	MAIN STREET & BOYDEN ROAD GRAVITY SEWER UPGRADE	BLM
1	4/27/18	RESPONSE TO PEER REVIEW COMMENTS	BLM
2	6/5/18	RESPONSE TO PEER REVIEW COMMENTS	BLM
3			

COMMONWEALTH OF MASSACHUSETTS JESSE M. MORENO No. 47315 PROFESSIONAL ENGINEER 6-5-18

Jesse M. Moreno - PE No.47315

GENERAL NOTES:

1. EXISTING CONDITIONS PLAN PREPARED BY NEW ENGLAND ENVIRONMENTAL, LLC DATED MARCH 7, 2018.
2. ALL UNDERGROUND UTILITY INFORMATION WAS DETERMINED FROM SURFACE INVESTIGATIONS AND EXISTING PLANS OF RECORD. THE CONTRACTOR SHALL LOCATE ALL UNDERGROUND UTILITIES IN THE FIELD PRIOR TO ANY SITE WORK. CALL DIG-SAFE (888) 344-7233 72-HOURS PRIOR TO ANY EXCAVATION.
3. CONTRACTOR SHALL RE-CAMERA EXISTING SANITARY MAIN AS REQUIRED TO VERIFY ALL SERVICE CONNECTIONS. RESULTS SHALL BE PROVIDED TO ENGINEER FOR REVIEW PRIOR TO CONSTRUCTION.
4. A MassDOT ACCESS PERMIT SHALL BE OBTAINED PRIOR TO CONSTRUCTION. THIS SHALL INCLUDE A TRAFFIC CONTROL PLAN.
5. PIPE SHALL BE LAID STARTING AT THE DOWNSTREAM END AND WORKING UP TO THE UPSTREAM CONNECTION.
6. SEE SHEET SS-03 FOR ADDITIONAL NOTES REGARDING THE GRAVITY SANITARY MAIN UPGRADE DESIGN AND CONSTRUCTION.

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Town Clerk Date

AMENDED DEFINITIVE PLAN GREENWOOD II

LOCATED ON
UNION STREET
HOLDEN, MASSACHUSETTS

SCALE: 1" = 10'

OWNED BY & PREPARED FOR

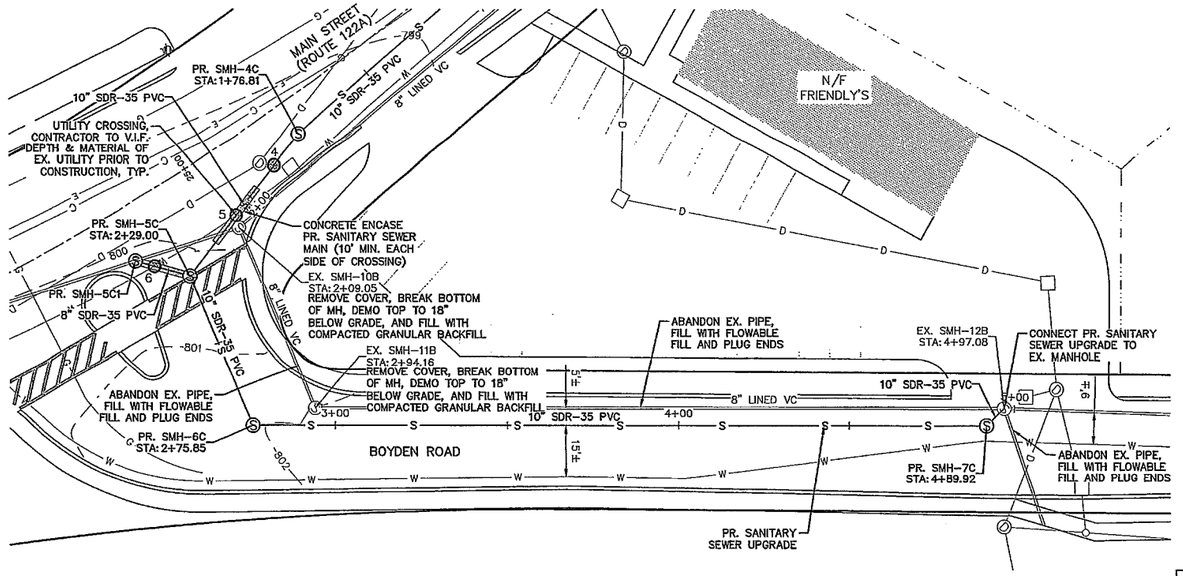
JACKSON WOODS INVESTMENTS, LLC.
87 MAIN STREET
RUTLAND, MA. 01543

ProTerra DESIGN GROUP, LLC
4 Bay Road, Bldg A, Suite 200
Hadley, MA 01035
Ph: (413)320-4918

Date: March 27, 2018	SS-01
Drawn By: BLM	
Checked By: JMM	
Job #: 16-026	Sheet 1 of 3

LEGEND

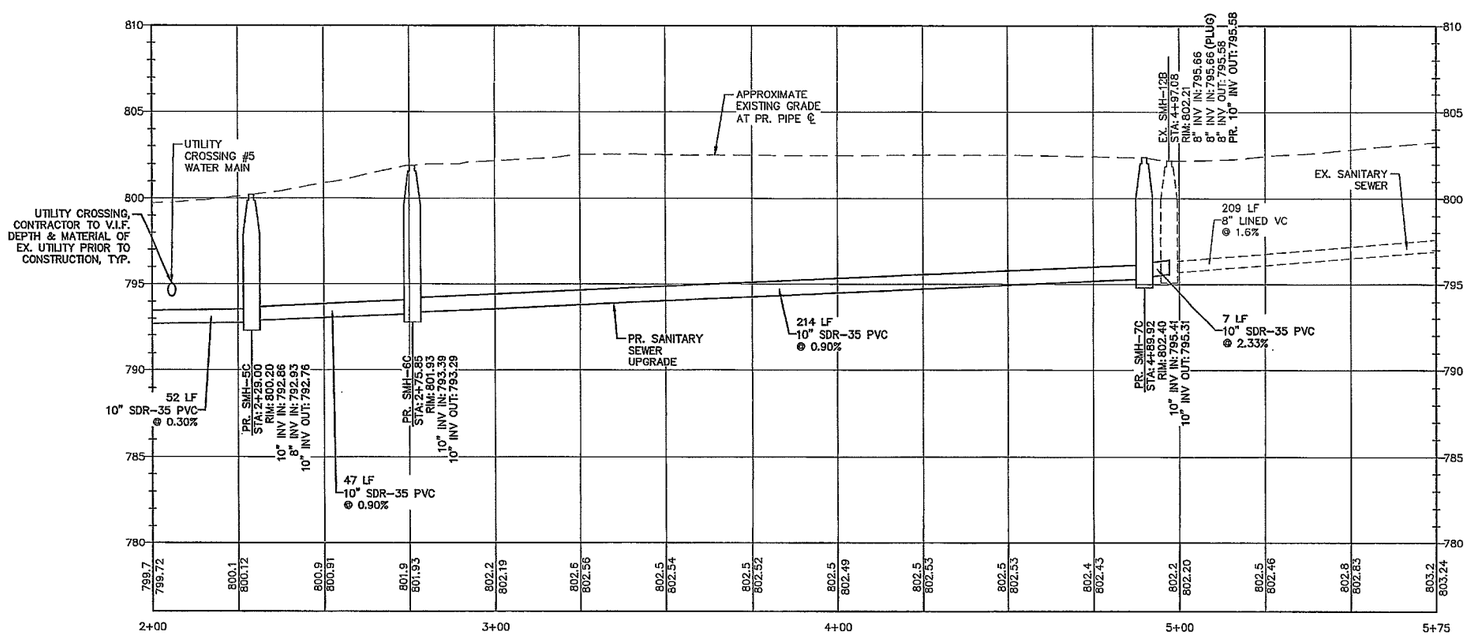
—C—	COMMUNICATION CONDUIT
—D—	DRAINAGE PIPE
—E—	ELECTRIC CONDUIT
—G—	GAS PIPE
—S—	SANITARY PIPE
—W—	WATER PIPE
Ⓒ	COMMUNICATION MANHOLE
Ⓓ	DRAINAGE MANHOLE
□	DRAINAGE INLET
Ⓔ	ELECTRIC MANHOLE
Ⓢ	SANITARY MANHOLE
⋈	WATER VALVE
	CONCRETE ENCASEMENT
1 Ⓤ	UTILITY CROSSING
EX.	EXISTING
PR.	PROPOSED
V.I.F.	VERIFY IN FIELD



PLAN

SCALE: 1"=20'

IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO FIELD VERIFY BY TEST PIT ALL UTILITY INVERTS AND SERVICE CONNECTIONS PRIOR TO CONSTRUCTION. ALL DISCREPANCIES SHALL BE REPORTED TO THE ENGINEER.



PROFILE

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

REVISIONS

REV	DATE	COMMENT	BY
0	3/27/18	MAIN STREET & BOYDEN ROAD GRAVITY SEWER UPGRADE	BLM
1	4/27/18	RESPONSE TO PEER REVIEW COMMENTS	BLM
2	6/5/18	RESPONSE TO PEER REVIEW COMMENTS	BLM
3			

COMMONWEALTH OF MASSACHUSETTS JESSE M. MORENO CIVIL No. 47315 REGISTERED PROFESSIONAL ENGINEER 6-5-18

Jesse M. Moreno - PE No.47315

GENERAL NOTES:

1. EXISTING CONDITIONS PLAN PREPARED BY NEW ENGLAND ENVIRONMENTAL, LLC DATED MARCH 7, 2018.
2. ALL UNDERGROUND UTILITY INFORMATION WAS DETERMINED FROM SURFACE INVESTIGATIONS AND EXISTING PLANS OF RECORD. THE CONTRACTOR SHALL LOCATE ALL UNDERGROUND UTILITIES IN THE FIELD PRIOR TO ANY SITE WORK. CALL DIG-SAFE (888) 344-7233 72-HOURS PRIOR TO ANY EXCAVATION.
3. CONTRACTOR SHALL RE-CAMERA EXISTING SANITARY MAIN AS REQUIRED TO VERIFY ALL SERVICE CONNECTIONS. RESULTS SHALL BE PROVIDED TO ENGINEER FOR REVIEW PRIOR TO CONSTRUCTION.
4. A MassDOT ACCESS PERMIT SHALL BE OBTAINED PRIOR TO CONSTRUCTION. THIS SHALL INCLUDE A TRAFFIC CONTROL PLAN.
5. PIPE SHALL BE LAID STARTING AT THE DOWNSTREAM END AND WORKING UP TO THE UPSTREAM CONNECTION.
6. SEE SHEET SS-03 FOR ADDITIONAL NOTES REGARDING THE GRAVITY SANITARY MAIN UPGRADE DESIGN AND CONSTRUCTION.

THIS ENDORSEMENT MAKES NO DETERMINATION AS TO ZONING COMPLIANCE OR PLAN ACCURACY.

APPROVAL UNDER THE SUBDIVISION CONTROL LAW IS REQUIRED.

HOLDEN PLANNING BOARD:

Date: _____

Certificate of No Appeal

Decision of the Town of Holden Planning Board approving this plan was recorded in the office of the Holden Town Clerk on
Date:_____
And no notice of appeal there from received by the Holden Town Clerk during the 20 days following.

Town Clerk _____ Date _____

AMENDED DEFINITIVE PLAN GREENWOOD II

LOCATED ON
UNION STREET
HOLDEN, MASSACHUSETTS

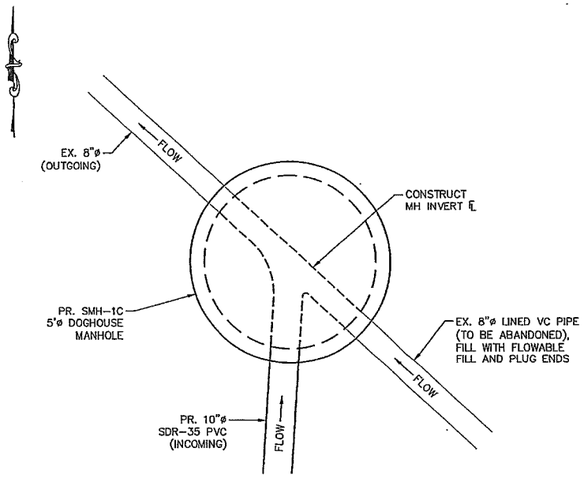
SCALE: 1" = 10'

OWNED BY & PREPARED FOR

JACKSON WOODS INVESTMENTS, LLC.
87 MAIN STREET
RUTLAND, MA. 01543

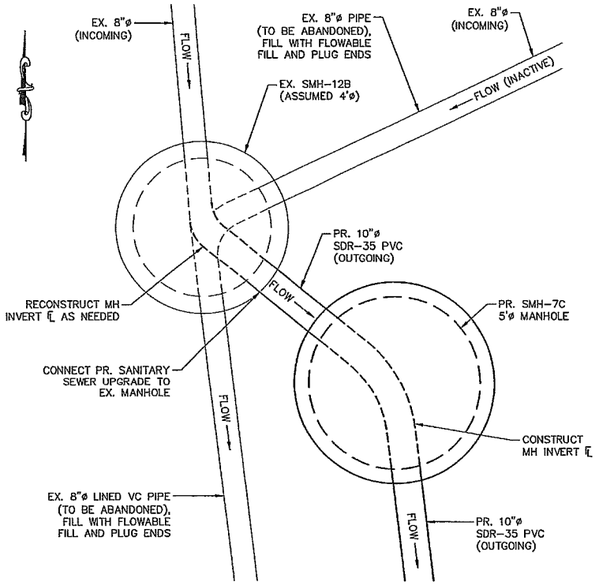
ProTerra DESIGN GROUP, LLC
4 Bay Road, Bldg A, Suite 200
Hadley, MA 01035
Ph:(413)320-4918

Date: March 27, 2018	SS-02
Drawn By: BLM	
Checked By: JMM	
Job #: 16-026	Sheet 2 of 3



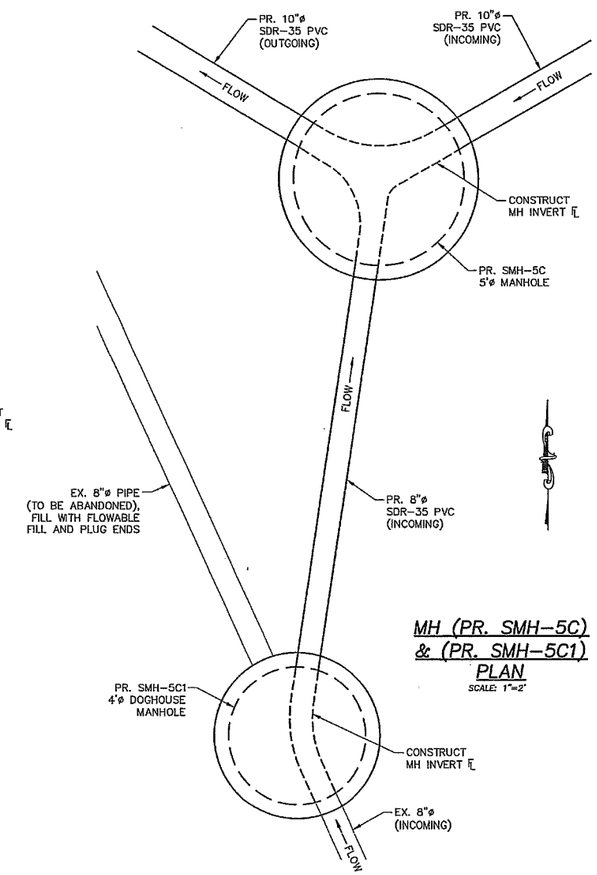
DOWNSTREAM CONNECTION MH (PR. SMH-1C) PLAN

SCALE: 1"=2'



UPSTREAM CONNECTION MH (PR. SMH-7C) PLAN

SCALE: 1"=2'



MH (PR. SMH-5C) & (PR. SMH-5C1) PLAN

SCALE: 1"=2'

HOLDEN SEWERAGE SPECIFICATIONS

SEWER PLANS AND RELATED EQUIPMENT, SUCH AS MANHOLES AND CONNECTING WYES SHALL BE CONSTRUCTED IN CONFORMITY WITH THE SPECIFICATIONS OF THE TOWN OF HOLDEN PUBLIC WORKS DEPARTMENT.

THE INSTALLATION OF SEWER PIPES AND RELATED EQUIPMENT SHALL NOT BE BACKFILLED UNTIL INSPECTED BY THE PROPER AUTHORITY.

SEWER MAINS SHALL BE SDR-35 PVC LAID TO A SLOPE NOTED ON THE PLANS. ALL SEWER LATERALS SHALL BE SDR-35 PVC LAID AT A MINIMUM SLOPE OF 2.0%. ALL SEWERS, INCLUDING LATERALS, SHALL BE LAID IN AN ENVELOPE OF ¾" WASHED GRAVEL.

LINE AND GRADE SHALL BE CONTROLLED BY THE USE OF LASER INSTRUMENTS. DEFLECTIONS IN LINE OR GRADE IN EXCESS OF ½" WILL BE CAUSE FOR REJECTION.

ALL CASTINGS AND FITTINGS SHALL BE MANUFACTURED IN NORTH AMERICA.

ALL SEWER MANHOLES SHALL BE VACUUM TESTED IN ACCORDANCE WITH ASTM C1244.

EXFILTRATION/INFILTRATION, AIR TESTS, AND TV INSPECTION

TIME FOR MAKING TESTS:

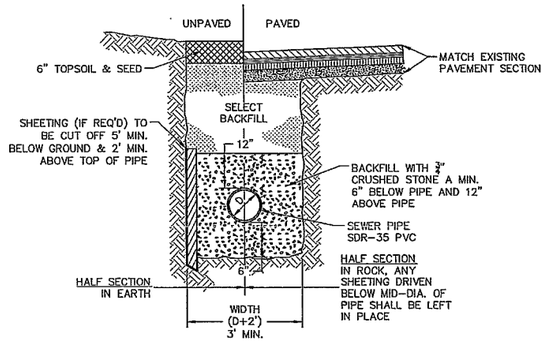
1) AFTER THE PIPE HAS BEEN LAID AND BACKFILLED, AN INFILTRATION/EXFILTRATION OR LOW PRESSURE AIR TEST SHALL BE MADE ON EACH SECTION OF PIPELINE BETWEEN MANHOLES. WHEN NO GROUNDWATER EXISTS AT THE TIME OF THE TEST, THE PIPELINE SHALL BE SUBJECTED TO AN EXFILTRATION TEST OR AN AIR TEST. TESTING SHALL BE COMPLETED BASED UPON DEP REQUIREMENTS BELOW.

TV INSPECTION:

2) WHEN THE PIPE LINES PASS AN EXFILTRATION/INFILTRATION OR AIR TEST, THEY SHALL BE SUBJECT TO A TV INSPECTION PERFORMED UNDER THE SUPERVISION OF THE ENGINEER. A RECORDING OF THE TV INSPECTION SHALL BE PROVIDED TO THE TOWN ENGINEER. ANY SECTIONS FOUND TO BE DAMAGED OR BLOCKED SHALL BE REPAIRED TO THE SATISFACTION OF THE TOWN ENGINEER OR RETESTED.

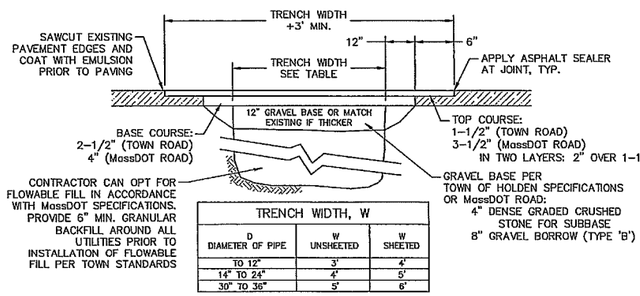
MINIMUM STANDARDS FOR WATERTIGHT CONSTRUCTION FOR SEWER PIPING

1. ALLOWABLE INFILTRATION OR EXFILTRATION SHOULD NOT EXCEED 100 GPD/INCH-DIAM/MILE OF SEWER. LEAKAGE TEST SHALL BE SPECIFIED IN THE SPECIFICATION AND MAY INCLUDE WATER OR LOW PRESSURE AIR TESTING.
2. WATERTIGHT CONSTRUCTION CONSISTS OF THE USE OF DUCTILE IRON, MECHANICAL JOINT PIPE, PRE-STRESSED CONCRETE CYLINDER PIPE, AND SOLVENT WELDED JOINT PVC PIPE AND ANY COMBINATION OF THE ABOVE.
3. PRESSURE TESTING SHOULD BE PERFORMED BY THE OWNER AFTER COMPLETION OF CONSTRUCTION, PRIOR TO STARTUP AND AFTER ON YEAR OF NATURAL SETTLING IN ORDER TO ENSURE THE WATER-TIGHTNESS OF THE AFFECTED COLLECTION SYSTEMS, MANHOLES AND PUMP STATION WET WELLS.
4. ACCEPTABLE AIR TESTING PROCEDURES ARE PRESENTED IN AMERICAN SOCIETY OF TESTING AND MATERIAL STANDARD C828-90T "STANDARD TEST METHOD FOR LOW-PRESSURE AIR TEST OF VITRIFIED CLAY PIPE". IN LIEU OF THAT STANDARD THE FOLLOWING TEST PROCEDURE IS ACCEPTABLE:
   a. PLUG ALL OPENINGS IN THE SECTION OF SEWER PIPING TO BE TESTED. PRESSURIZE THE SYSTEM TO BE TESTED TO AN AIR PRESSURE OF 5 PSI. SHUT OFF THE PRESSURIZED AIR SOURCE.
   b. ALLOW THE PRESSURE TO STABILIZE FOR A MINIMUM OF 5 MINUTES.
   c. RECORD THE STABILIZED PRESSURE IN THE TEST SECTION. RECORD THE TEST START TIME. THE MINIMUM TEST PRESSURE IS 4 PSI. THE MINIMUM TEST TIME IS 5 MINUTES. AT THE END OF THE PRESSURE TESTING TIME PERIOD RECORD THE TEST PRESSURE AND THE TEST TERMINATION TIME.
   d. IF THE PRESSURE DROP IS GREATER THAN 2 PSI DURING THE DURATION OF THE TEST, THE TESTED SECTION HAS FAILED THE TEST.
   e. TESTES ARE FAILED, REPAIRS MUST BE MADE TO THE AFFECTED SEWER PIPE AND RETESTED.
5. INSPECTIONS WILL ONLY BE MADE DURING THE HOURS OF 8:00 AM TO 4:00 PM MONDAYS THROUGH THURSDAYS AND 8:00 AM TO NOON ON FRIDAYS EXCEPT HOLIDAYS. PLEASE NOTE: A MINIMUM TWO (2) HOUR NOTIFICATION SHALL BE GIVEN BY THE CONTRACTOR FOR REQUESTED INSPECTIONS.
6. PROPER NOTIFICATION TO ALL REQUIRED AGENCIES MUST BE MADE WITHIN REQUIRED TIME PERIODS.
   a. NOTIFICATION TO DIG-SAFE (888-344-7233) MUST BE MADE 72 HOURS PRIOR TO THE START OF WORK.
   b. THE HOLDEN WATER DEPARTMENT (508-210-5550) MUST BE NOTIFIED 48 HOURS PRIOR TO THE START OF WORK FOR INFORMATION AND LOCATION MARKING OF WATER LINES.
7. THE CONTRACTOR IS RESPONSIBLE TO COMPLY WITH ALL APPLICABLE OSHA OPEN TRENCH SAFETY REQUIREMENTS. IT IS NOT THE TOWN'S RESPONSIBILITY TO INSPECT EACH SITE FOR COMPLIANCE.



SEWER TRENCH DETAIL

NOT TO SCALE



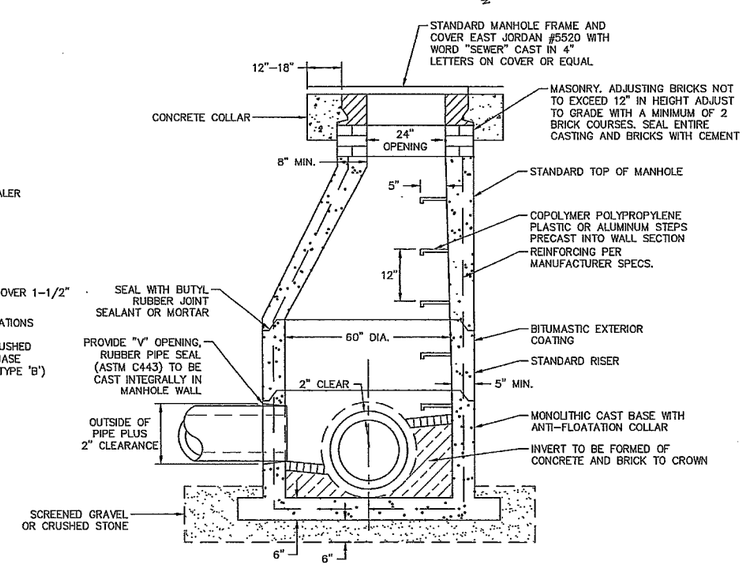
TRENCH WIDTH, W		
D DIAMETER OF PIPE	W UNSHEETED	W SHEETED
TO 12"	3'	4'
14" TO 24"	4'	5'
30" TO 36"	5'	6'

NOTES:

1. CONTRACTOR TO PROVIDE PAVEMENT PATCH TO MEET MassDOT AND/OR TOWN OF HOLDEN PUBLIC WORKS SPECIFICATIONS.
2. PAVEMENT TO BE MINIMUM 4" (TOWN ROAD) OR 7-1/2" (MassDOT) HOT MIX OR GREATER TO MATCH EXISTING FOR PERMANENT PATCH.
3. TEMPORARY PAVEMENT THICKNESS SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE MassDOT PERMIT ISSUED FOR THE PROJECT.

PAVEMENT PATCH DETAIL FOR TRENCH SECTIONS

NOT TO SCALE



SEWER MANHOLE DETAIL

NOT TO SCALE

REVISIONS

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3			

COMMONWEALTH OF MASSACHUSETTS
JESSE M. MORENO
No. 47315
REGISTERED PROFESSIONAL ENGINEER
6-5-18

Jesse M. Moreno - PE No.47315

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Town Clerk Date

AMENDED DEFINITIVE PLAN GREENWOOD II

LOCATED ON
UNION STREET
HOLDEN, MASSACHUSETTS

SCALE: 1" = 10'

OWNED BY & PREPARED FOR

JACKSON WOODS INVESTMENTS, LLC.
87 MAIN STREET
RUTLAND, MA. 01543

ProTerra
DESIGN GROUP, LLC
4 Bay Road, Bldg A,
Suite 200
Hadley, MA 01035
Ph:(413)320-4918

Date: March 27, 2018

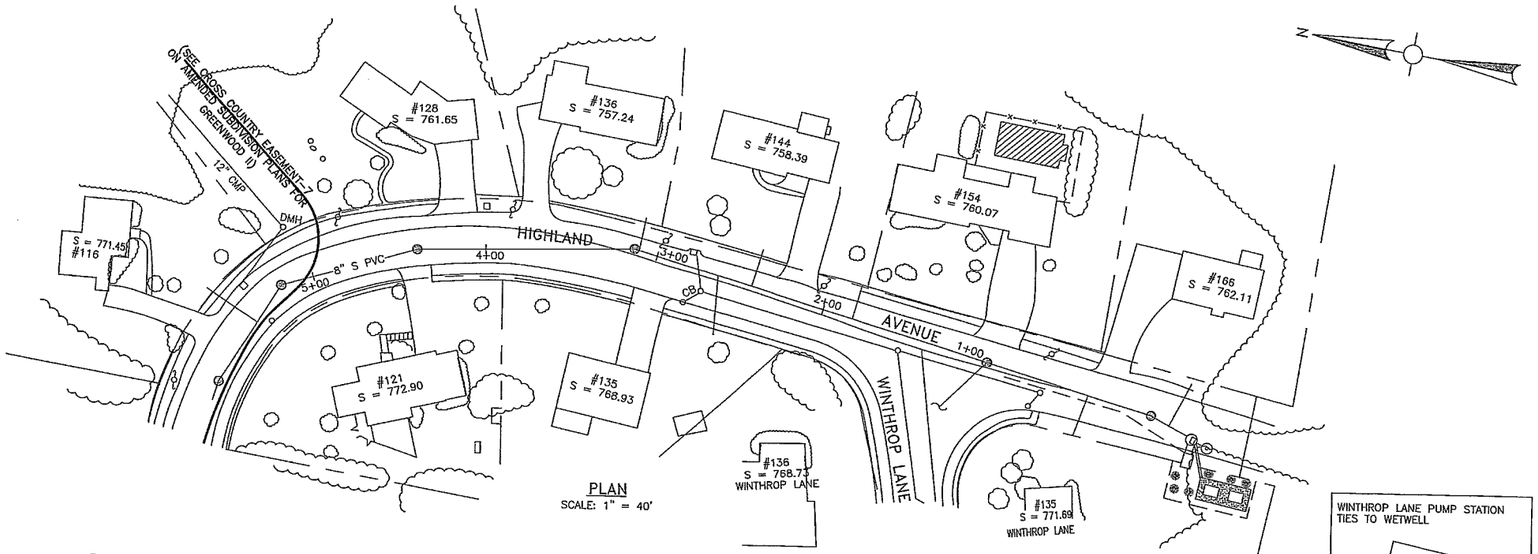
Drawn By: BLM

Checked By: JMM

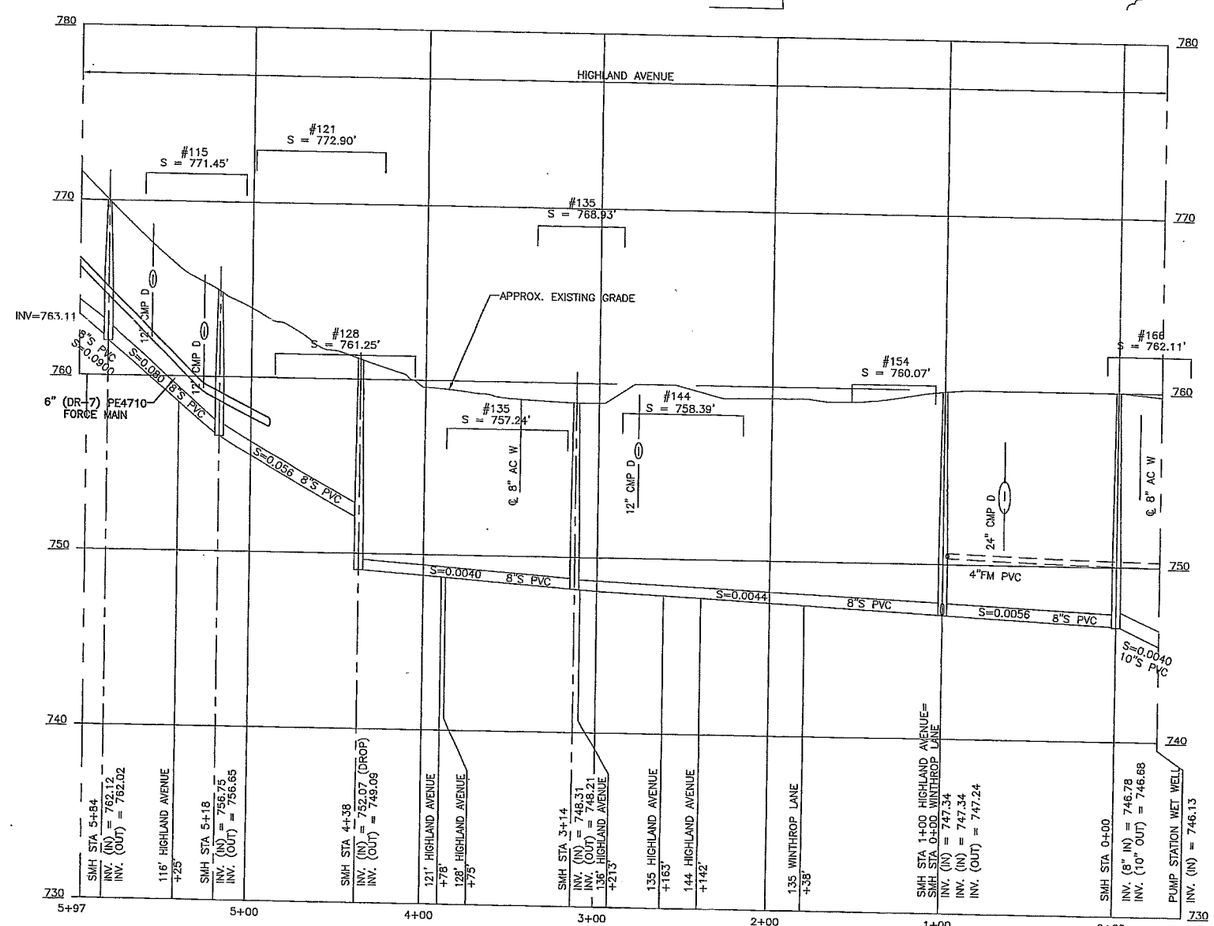
Job #: 16-026

SS-03

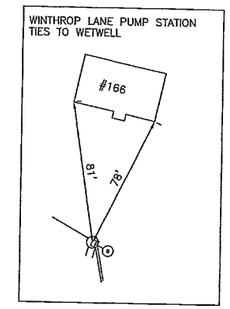
Sheet 3 of 3

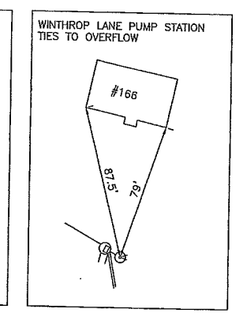


PLAN
SCALE: 1" = 40'



PROFILE
SCALE: 1" = 40' HORIZ
1" = 4' VERT





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COMMONWEALTH OF MASSACHUSETTS
JAMES B. KALLOCH
CIVIL
No. 24532
REGISTERED PROFESSIONAL ENGINEER

James B. Kalloch - PE No.24532

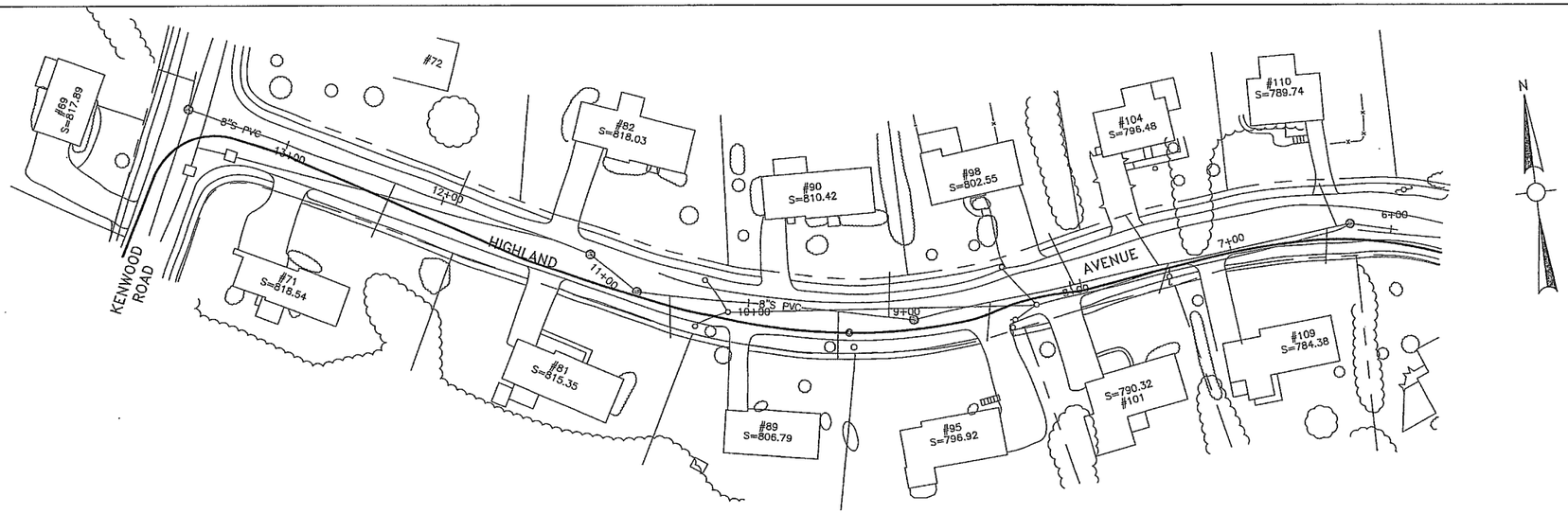
811 DigSafe
MA-ME-NH-RI-VT

CONTRACTOR TO VERIFY ACTUAL LOCATION OF EXISTING UTILITY SERVICES IN THE FIELD PRIOR TO CONSTRUCTION.

OFF-SITE SEWER CONNECTION PLAN

PREPARED FOR:
JACKSON WOODS INVESTMENTS, LLC.
87 MAIN STREET
RUTLAND, MA. 01543

DATE: 6/01/2018	DRAWN BY: RMG	SHEET: 1 of 4	JOB#: 907-13



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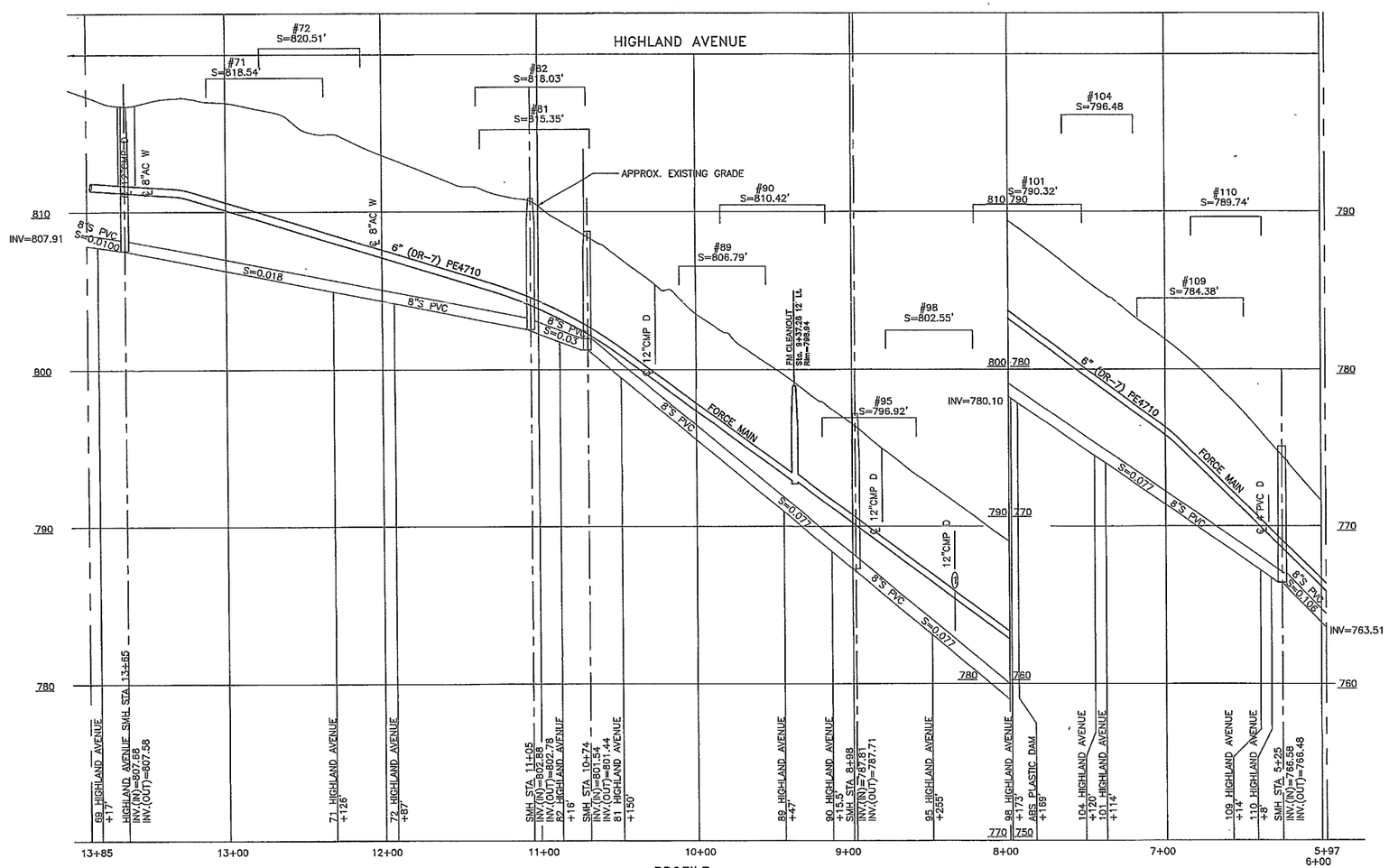

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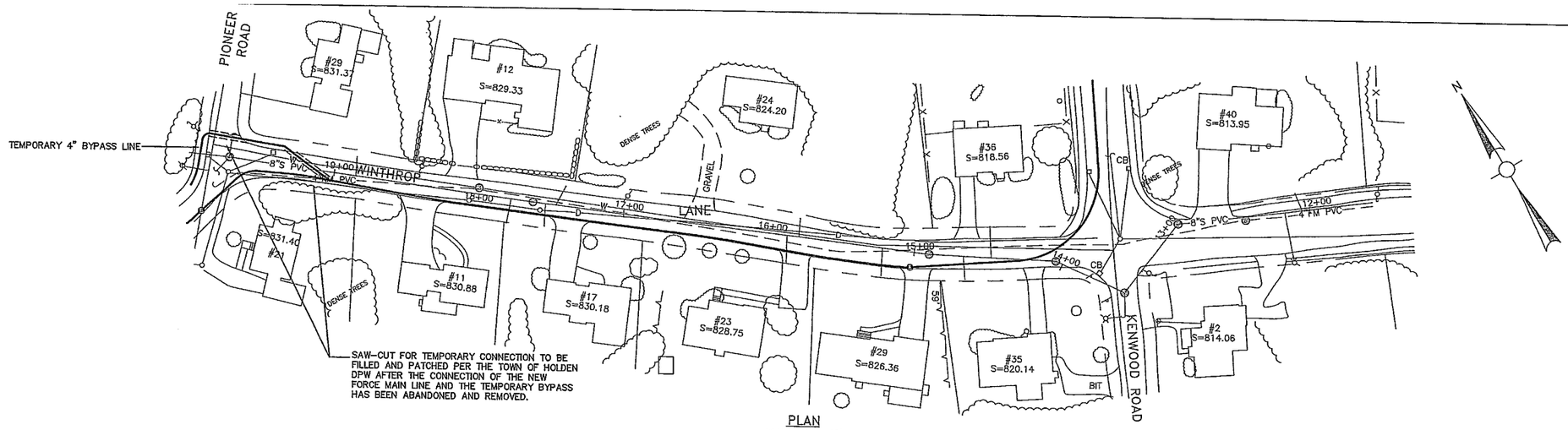

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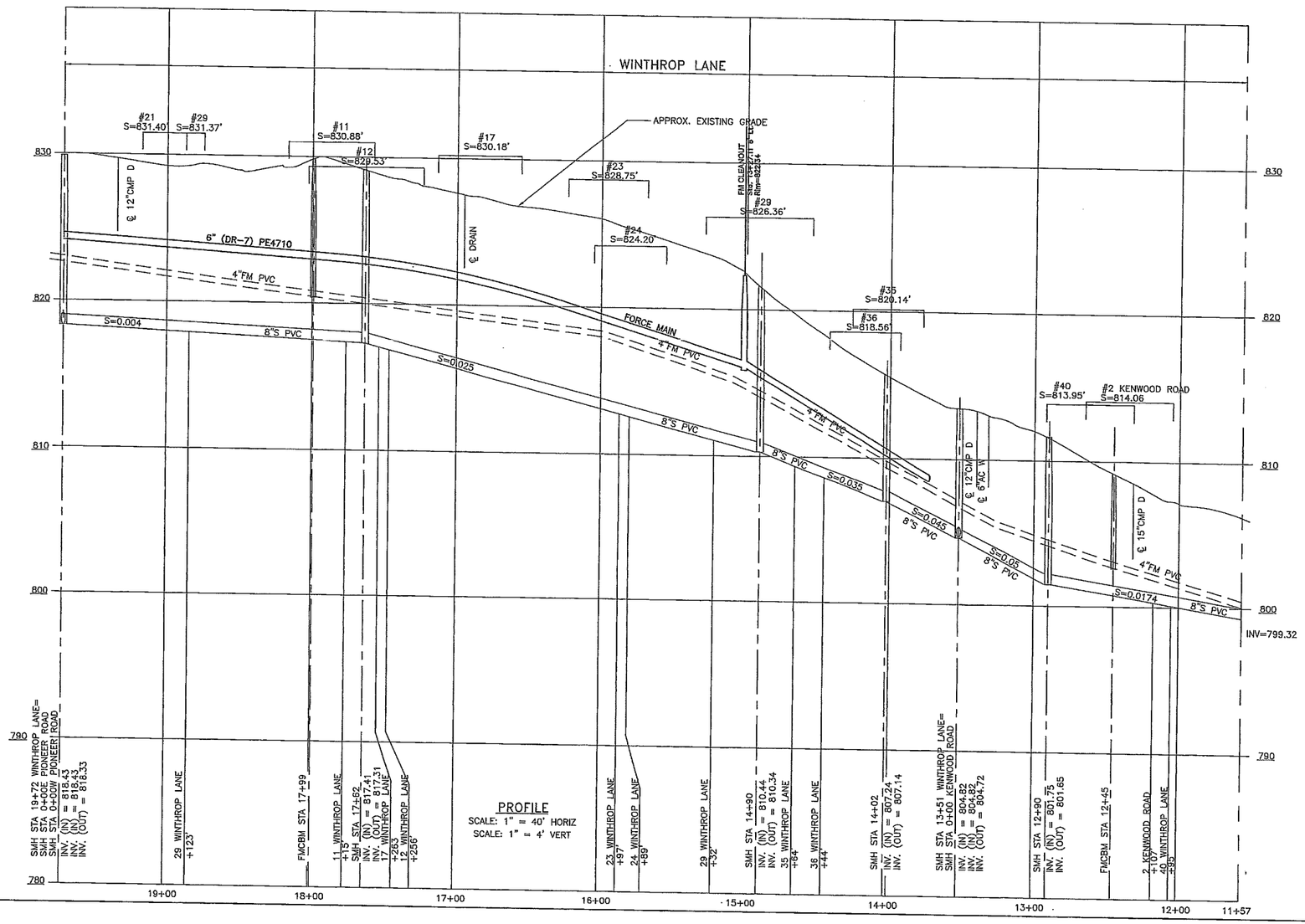
SCALE: 1" = 40'



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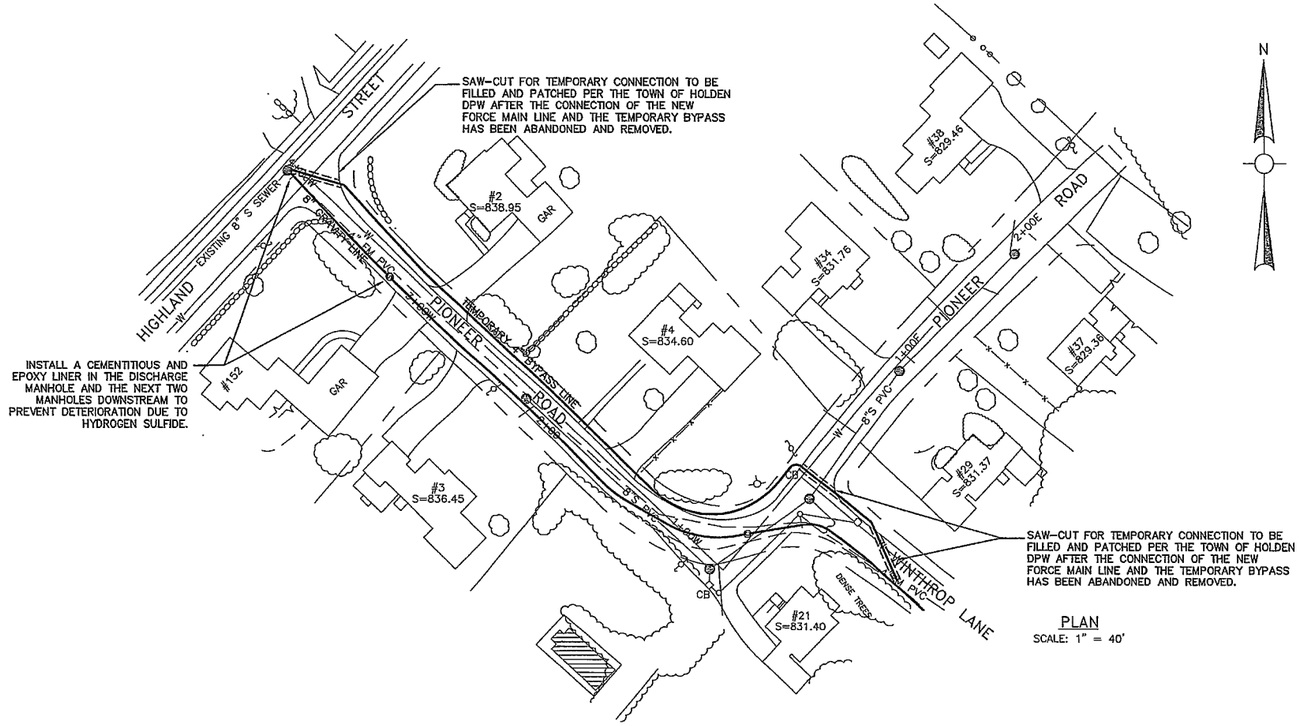

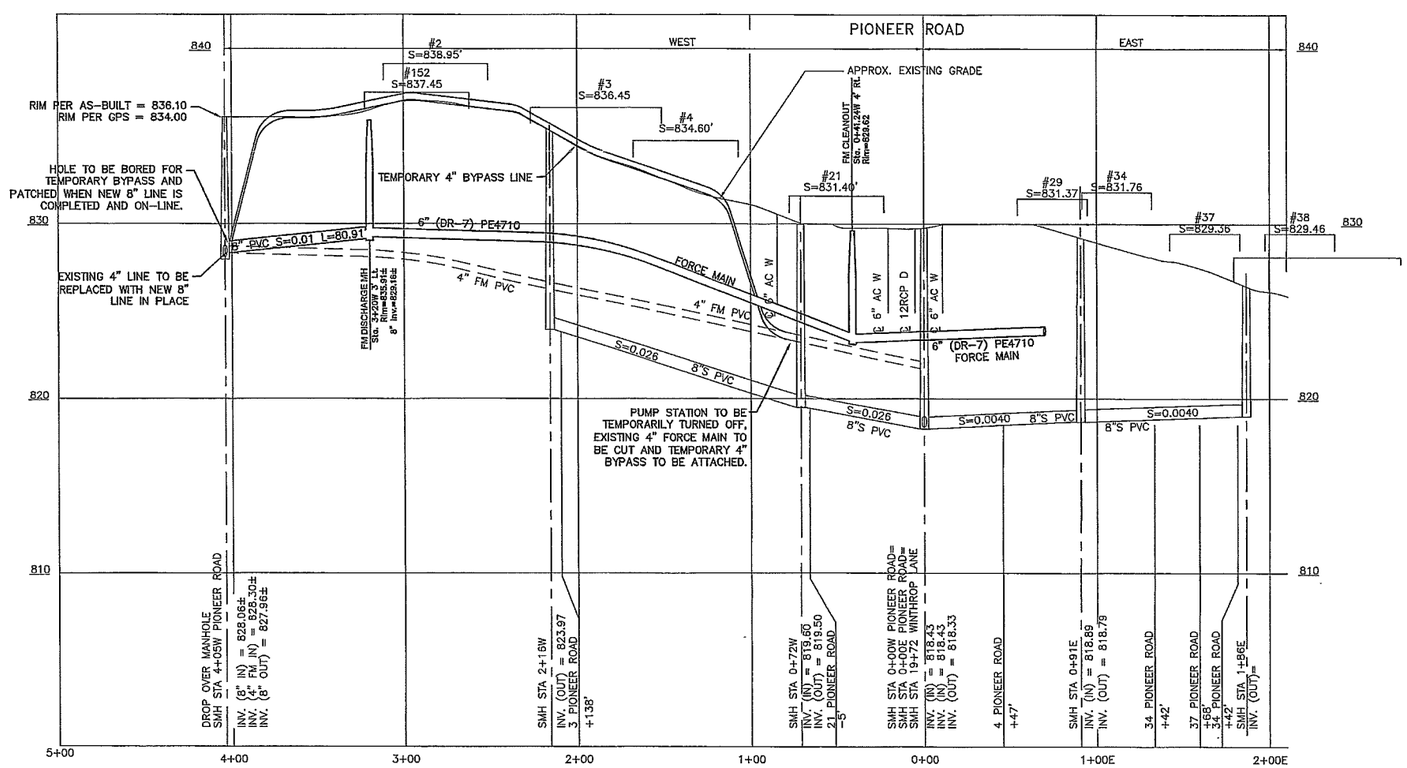

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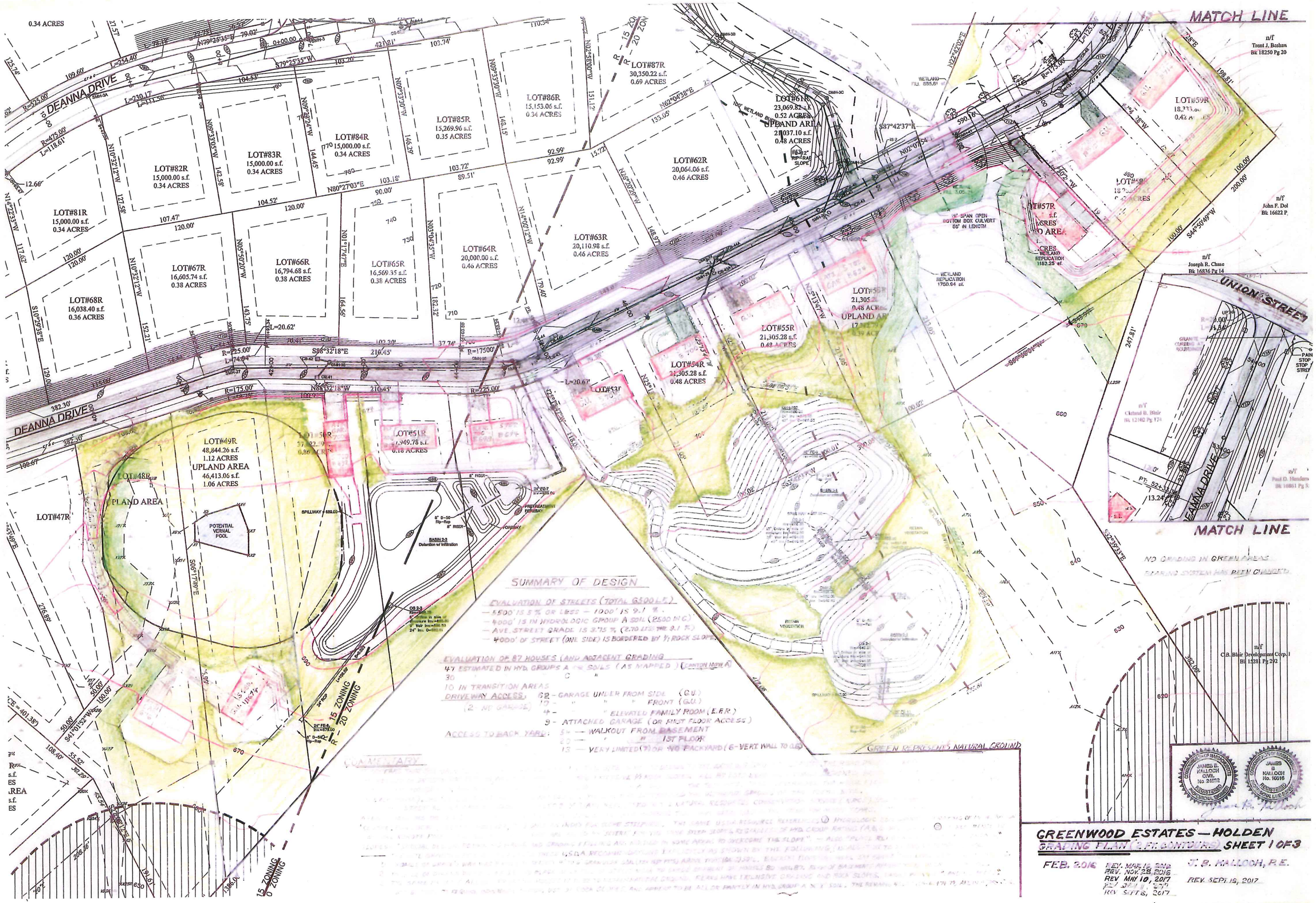

SUMMARY OF DESIGN

EVALUATION OF STREETS (TOTAL 6500 L.F.)
- 5500' IS 5% OR LESS — 1000' IS 9.1 %.
- 4000' IS IN HYDROLOGIC GROUP A SOIL (2500 IN C)
- AVE. STREET GRADE IS 3.75 % (2.70 IN THE 9.1 %)
- 4000' OF STREET (ONE SIDE) IS BORDERED BY ½ ROCK SLOPE

EVALUATION OF 87 HOUSES (AND ADJACENT GRADING

47 ESTIMATED IN HYD. GROUPS A [illegible] SOILS (AS MAPPED) (CANTON NEW A)
30 " C "
10 IN TRANSITION AREAS

DRIVEWAY ACCESS: 62 - GARAGE UNDER FROM SIDE (G.U.)
(2 NO GARAGE) 12 - " " " FRONT (G.U.)
4 - " ELEVATED FAMILY ROOM (E.F.R.)
9 - ATTACHED GARAGE (OR FIRST FLOOR ACCESS)

ACCESS TO BACK YARD: 54 — WALKOUT FROM BASEMENT
20 — " 1ST FLOOR
13 — VERY LIMITED (?) OR NO BACKYARD (6-VERT WALL TO [illegible])

COMMENTARY

GREENWOOD ESTATES — HOLDEN

GRADING PLAN (SUBDIVISION) SHEET 1 OF 3

FEB. 2016 REV. MAR. 16, 2016 REV. NOV. 28, 2016 REV MAY 10, 2017 REV. JULY 27, 2017 REV. SEPT. 8, 2017

J. B. KALLOCH, P.E.

REV. SEPT. 15, 2017

UNION STREET
HARRINGTON AVENUE
APPLETREE LANE
DEANNA DRIVE
GRACE'S WAY
LOT 5R
LOT 6R
LOT 7R
LOT 8R
LOT#9R
LOT#10R
LOT#11R
LOT#12R
LOT#13R
15,046.13 s.f.
0.35 ACRES
LOT#14R
15,002.33 s.f.
0.34 ACRES
LOT#15R
LOT#16R
LOT#17R
17,613.29 s.f.
0.40 ACRES
LOT#18R
24,938.39 s.f.
0.56 ACRES
LOT#19R
31,061.50 s.f.
0.71 ACRES
LOT#20R
LOT#21R
2.96 s.f.
ACRES
LOT#61R
23,069.82 s.f.
0.52 ACRES
UPLAND AREA
21,037.10 s.f.
0.48 ACRES
LOT#62R
20,064.06 s.f.
0.46 ACRES
LOT#63R
20,110.98 s.f.
0.46 ACRES
LOT#64R
LOT#65R
16,569.35 s.f.
0.38 ACRES
LOT#66R
LOT 67R
LOT#68R
16,038.40 s.f.
0.36 ACRES
LOT#69R
18,406.86 s.f.
0.42 ACRES
LOT#70R
0.34 ACRES
LOT#71R
15,000.00 s.f.
0.34 ACRES
LOT#48R
LOT#49R
LOT#50R
LOT#51R
LOT#52R
LOT#53R
LOT#54R
21,305.28 s.f.
0.48 ACRES
LOT#55R
21,305.28 s.f.
0.48 ACRES
LOT#56R
LOT#57R
LOT#58R
LOT#59R
LOT#60R
LOT#84R
LOT#85R
LOT#86R
LOT#87
LOT#82R
LOT#81R
LOT#80R
LOT#79R
LOT#78R
LOT#77R
LOT#76R
LOT#75R
LOT#74R
LOT#73R
LOT#72R
LOT#32
LOT 1R
LOT 2R
LOT 3R
LOT 4R
LOT 5R
LOT 6R
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LOT 9R
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LOT 98R
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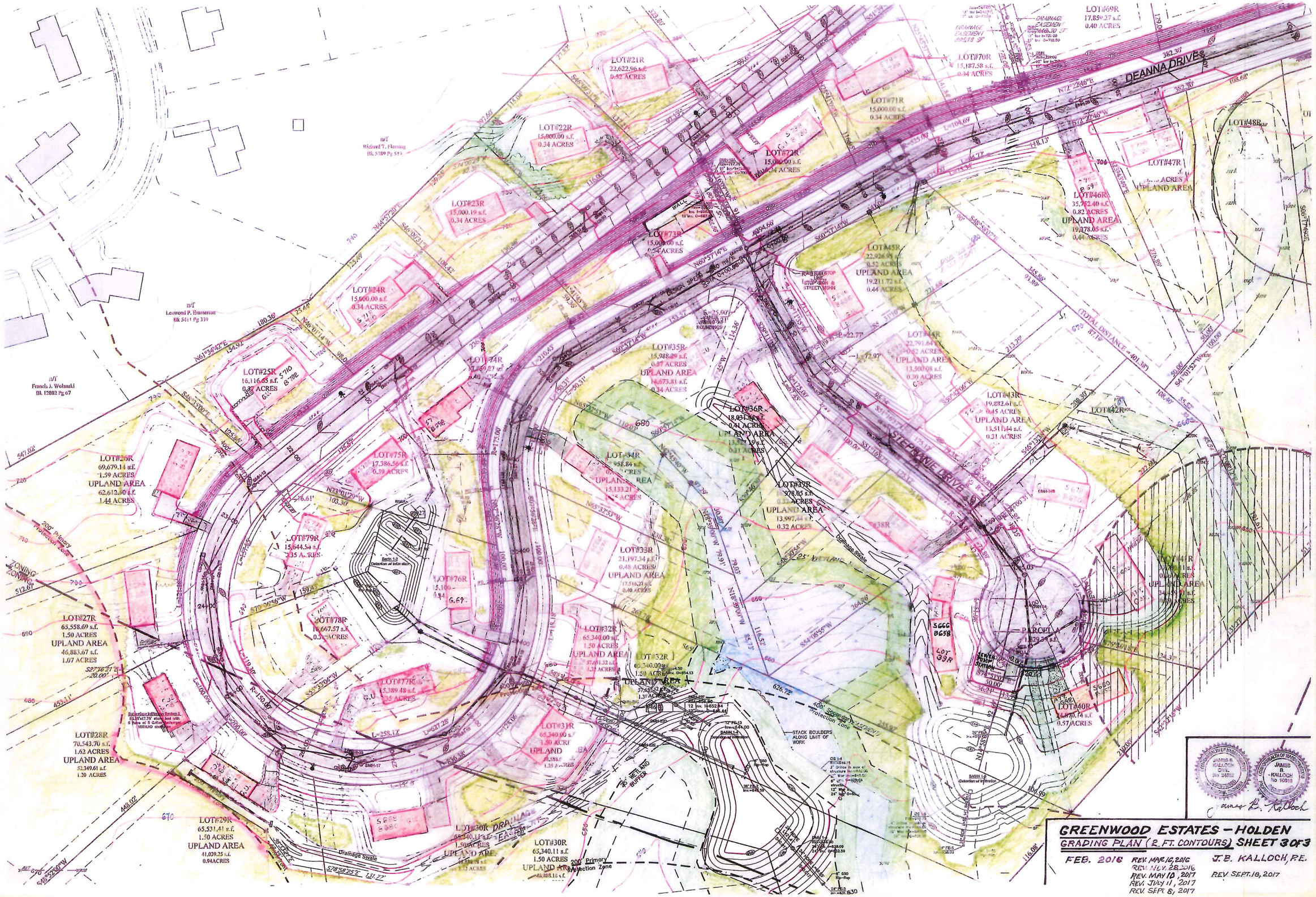
LOT 106R
LOT 107R
LOT


DEANNA DRIVE
STEPHANIE DRIVE
LOT#69R
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0.34 ACRES
LOT#71R
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0.34 ACRES
LOT#72R
15,000.00 s.f.
0.34 ACRES
LOT#73R
15,000.00 s.f.
0.34 ACRES
LOT#21R
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LOT#24R
15,000.00 s.f.
0.34 ACRES
LOT#25R
16,116.03 s.f.
0.37 ACRES
LOT#26R
69,679.14 s.f.
1.59 ACRES
UPLAND AREA
62,612.30 s.f.
1.44 ACRES
LOT#27R
65,558.69 s.f.
1.50 ACRES
UPLAND AREA
46,883.67 s.f.
1.07 ACRES
LOT#28R
70,543.70 s.f.
1.62 ACRES
UPLAND AREA
52,349.61 s.f.
1.20 ACRES
LOT#29R
65,531.41 s.f.
1.50 ACRES
UPLAND AREA
41,039.25 s.f.
0.94ACRES
LOT#30R
65,340.11 s.f.
1.50 ACRES
UPLAND AREA
LOT#31R
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UPLAND AREA
LOT#32R
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UPLAND AREA
LOT#33R
21,197.34 s.f.
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UPLAND AREA
17,518.27 s.f.
0.40 ACRES
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UPLAND AREA
15,133.21 s.f.
LOT#35R
15,988.29 s.f.
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UPLAND AREA
14,673.81 s.f.
0.34 ACRES
LOT#36R
18,031.38 s.f.
0.41 ACRES
UPLAND AREA
LOT#37R
978.85 s.f.
ACRES
UPLAND AREA
13,997.44 s.f.
0.32 ACRES
LOT#38R
LOT#39R
LOT#40R
24,870.74 s.f.
0.57ACRES
LOT#41R
UPLAND AREA
LOT#42R
LOT#43R
19,882.61 s.f.
0.45 ACRES
UPLAND AREA
13,511.44 s.f.
0.31 ACRES
LOT#44R
22,791.64 s.f.
0.52 ACRES
UPLAND AREA
13,500.08 s.f.
0.30 ACRES
LOT#45R
22,926.95 s.f.
0.52 ACRES
UPLAND AREA
19,211.72 s.f.
0.44 ACRES
LOT#46R
35,762.40 s.f.
0.82 ACRES
UPLAND AREA
19,378.05 s.f.
0.44 ACRES
LOT#47R
UPLAND AREA
LOT#48R
LOT#75R
17,386.56 s.f.
0.39 ACRES
LOT#76R
LOT#77R
15,389.48 s.f.
LOT#78R
16,667.57 s.f.
LOT#79R
15,644.54 s.f.
n/f
Richard T. Fleming
Bk 5189 Pg 519
n/f
Leawood P. Emmerton
Bk 5411 Pg 339
n/f
Francis J. Wolanski
Bk 12802 Pg 67
TOTAL DISTANCE = 401.38'
200' Primary Protection Zone
Drainage Swale
STACK BOULDERS ALONG LIMIT OF WORK
WETLAND BUFFER
SEWER PUMP STATION
PARCEL A
GREENWOOD ESTATES – HOLDEN
GRADING PLAN (2 FT. CONTOURS) SHEET 3 OF 3
FEB. 2016
REV. MAR. 16, 2016
REV. NOV. 28, 2016
REV. MAY 10, 2017
REV. JULY 11, 2017
REV. SEPT. 8, 2017
J.B. KALLOCH, P.E.
REV. SEPT. 18, 2017

REGISTRY USE ONLY

N/F CARR

N/F COOMBS

HIGH RIDGE ROAD

N/F WEINER

N/F TOWN OF HOLDEN

PL.BK. 861 PL. 106

HIGHLAND STREET (ROUTE 31)

(PUBLIC, VARIABLE WIDTH)

LOT 4D
1,202 S.F.
FOR HIGHWAY PURPOSES

EXISTING ELECTRIC TRANSFORMER EASEMENT

R=2006.90'
L=34.92'

(267.77')
56.22'

61.22'

N09°42'10"E
28.34'

35.00'

86.99'

86.99'

R=20.00'
L=53.79'

N80°17'50"W
20.00

35.00
S09°42'10"W

20.00'

S80°17'50"E
41.04'

21.04'

R=35.00'
L=82.37'

LOT 4C
4,050 S.F.
NON-BUILDABLE

LOT 4A
18,049 S.F.
BUILDING LOT

N71°32'51"E

48.18'

R=20.00'
L=40.46

LOT 4B
6,710 S.F.
FOR HIGHWAY PURPOSES

N/F MW PROPERTIES, LLC

S35°35'54"W

UNION STREET

(PUBLIC, VARIABLE WIDTH)

S42°00'14"W

319.17'
(454.34')

(224.71')

(252.11')

N/F PAINE

N/F FALCONE

N/F CLEALAND B. BLAIR

N/F NANCY J. BLAIR

N/F CLEALAND B. BLAIR

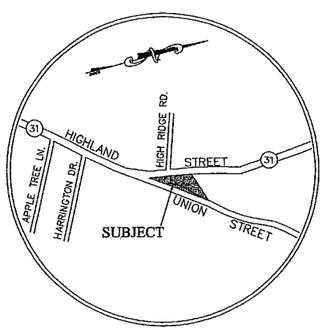
N/F NANCY J. BLAIR

HOLDEN PLANNING BOARD:

APPROVAL UNDER THE SUBDIVISION CONTROL LAW IS NOT REQUIRED.

DATE: _____

ZONE: "R-2"



LOCUS MAP
SCALE: 1" = 500'

NOTES:

1. THIS PLAN CREATES LOTS 4A, 4B, 4C AND 4D FROM LOT 4 AS SHOWN ON A PLAN BY LAND PLANNING, INC. ENTITLED "ANR PLAN LOCATED AT 39 UNION STREET HOLDEN, MASS-ACHUSETTS OWNED BY DAVID J. LUNDERGAN AND BETH B. LUNDERGAN" DATED 9/06/07 AND RECORDED IN W.D.R.D. PL. BK. 861 PL. 106.
2. LOT 4A IS TO BE CONSIDERED A BUILDABLE LOT.
3. LOTS 4B, 4C AND 4D ARE NON-BUILDABLE LOTS AND ARE TO BE DEEDED TO THE TOWN OF HOLDEN.

PROGRESS PRINT

PLAN OF LAND

LOCATED IN
HOLDEN, MASSACHUSETTS
OWNED BY
MW PROPERTIES, LLC
1490 MAIN STREET
JEFFERSON, MASSACHUSETTS

REFERENCES:
REFERENCE IS MADE TO THE FOLLOWING DEEDS AND PLANS OF RECORD RECORDED IN THE WORCESTER DISTRICT REGISTRY OF DEEDS.

BOOK	PAGE	PLAN BOOK	PLAN
42271	276	861	106

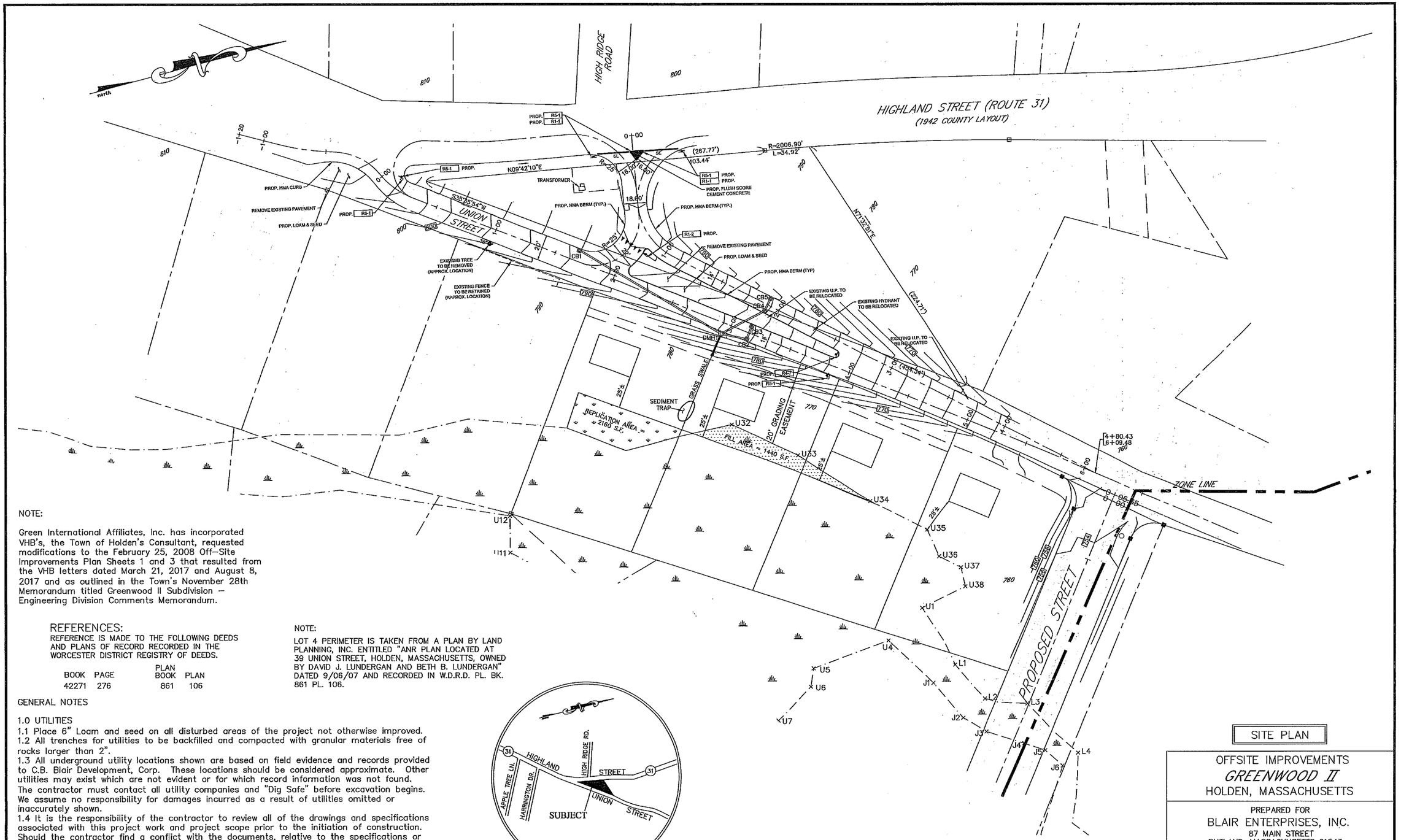
I HEREBY CERTIFY THAT THIS PLAN HAS BEEN PREPARED IN CONFORMITY WITH THE RULES AND REGULATIONS OF THE REGISTERS OF DEEDS OF THE COMMONWEALTH OF MASSACHUSETTS.

DATE _____

ENGINEER / SURVEYOR
JAMES B. KALLOCH P.L.S. & P.E.
WACHUSETT STREET
RUTLAND, MA 01543
(508) 886-4040

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.

DRAWN BY:	MSM	DATE:	01-30-08
CHECKED BY:	JBK	DRAWING NO.:	XXXX
JOB NO.:	GREEN2	SHEET	1 OF 1



NOTE:

Green International Affiliates, Inc. has incorporated VHB's, the Town of Holden's Consultant, requested modifications to the February 25, 2008 Off-Site Improvements Plan Sheets 1 and 3 that resulted from the VHB letters dated March 21, 2017 and August 8, 2017 and as outlined in the Town's November 28th Memorandum titled Greenwood II Subdivision – Engineering Division Comments Memorandum.

REFERENCES:
REFERENCE IS MADE TO THE FOLLOWING DEEDS AND PLANS OF RECORD RECORDED IN THE WORCESTER DISTRICT REGISTRY OF DEEDS.

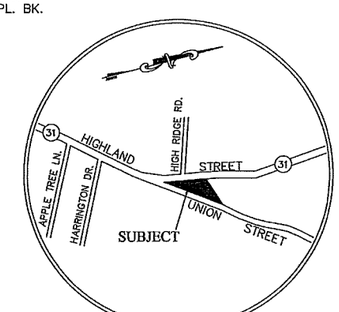
BOOK	PAGE	PLAN BOOK	PLAN
42271	276	861	106

NOTE:

LOT 4 PERIMETER IS TAKEN FROM A PLAN BY LAND PLANNING, INC. ENTITLED "ANR PLAN LOCATED AT 39 UNION STREET, HOLDEN, MASSACHUSETTS, OWNED BY DAVID J. LUNDERGAN AND BETH B. LUNDERGAN" DATED 9/06/07 AND RECORDED IN W.D.R.D. PL. BK. 861 PL. 106.

GENERAL NOTES

1.0 UTILITIES
1.1 Place 6" Loam and seed on all disturbed areas of the project not otherwise improved.
1.2 All trenches for utilities to be backfilled and compacted with granular materials free of rocks larger than 2".
1.3 All underground utility locations shown are based on field evidence and records provided to C.B. Blair Development, Corp. These locations should be considered approximate. Other utilities may exist which are not evident or for which record information was not found. The contractor must contact all utility companies and "Dig Safe" before excavation begins. We assume no responsibility for damages incurred as a result of utilities omitted or inaccurately shown.
1.4 It is the responsibility of the contractor to review all of the drawings and specifications associated with this project work and project scope prior to the initiation of construction. Should the contractor find a conflict with the documents, relative to the specifications or applicable codes, it is the contractor's responsibility to notify the project engineer of record in writing prior to the start of construction. Failure by the contractor to notify the project engineer shall constitute acceptance of full responsibility by the contractor to complete the scope of work as defined by the drawings and in full conformance with local regulations and codes.
1.5 All work shall conform to the Town of Holden and the Massachusetts Highway Department construction standards as applicable.
1.7 All work is to be performed in accordance with O.S.H.A. requirements.
1.8 Contractor is responsible for all excavation to be performed in accordance with current O.S.H.A. standards, as well as additional provisions to assure stability of contiguous structures, as field conditions dictate.



LOCUS MAP
SCALE: 1" = 500'

GREEN INTERNATIONAL AFFILIATES, INC.
CIVIL AND STRUCTURAL ENGINEERS

ENGINEER / SURVEYOR
JAMES B. KALLOCH P.L.S. & P.E.
WACHUSETT STREET
RUTLAND, MA 01543
(508) 886-4040

SITE PLAN

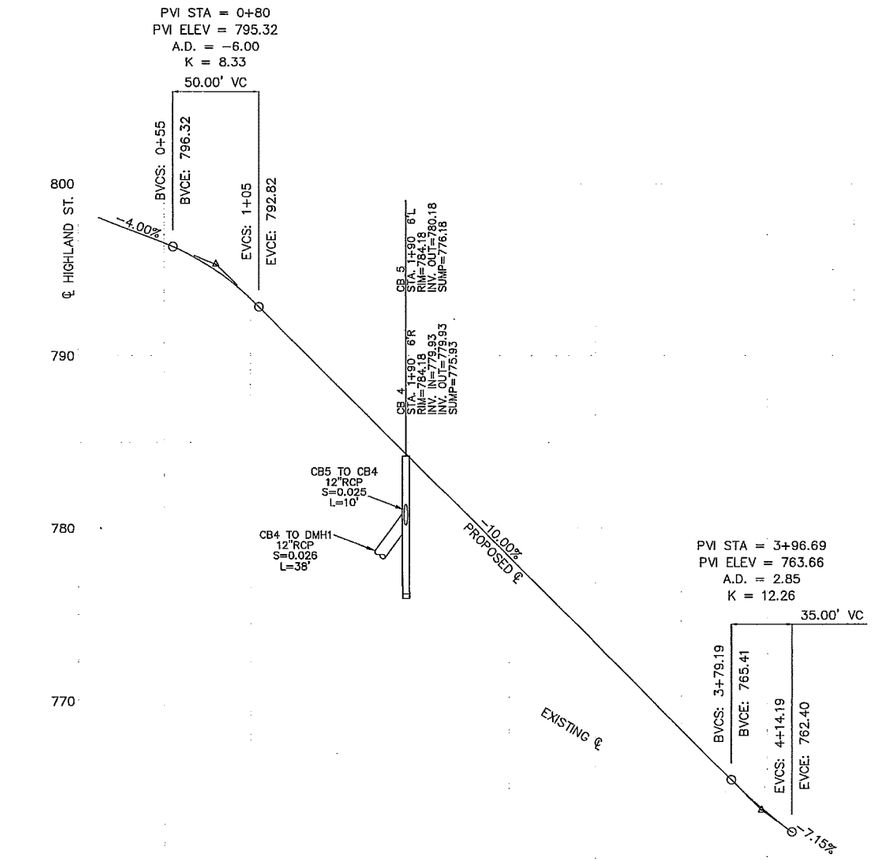
OFFSITE IMPROVEMENTS
GREENWOOD II
HOLDEN, MASSACHUSETTS

PREPARED FOR
BLAIR ENTERPRISES, INC.
87 MAIN STREET
RUTLAND, MASSACHUSETTS 01543

GRAPHIC SCALE
30 0 15 30 60 120
(IN FEET)
1 inch = 30 ft.

REVISION #2
1/26/18

DRAWN BY:	MSM	DATE:	01-29-08
CHECKED BY:	JBK	DRAWING NO.:	
JOB NO.:	GREEN2	SHEET	1 OF 4



PROFILE
HORIZONTAL SCALE: 1"=40'
VERTICAL SCALE: 1"=4'

PROFILE OF UNION ST.
TO HIGHLAND ST.

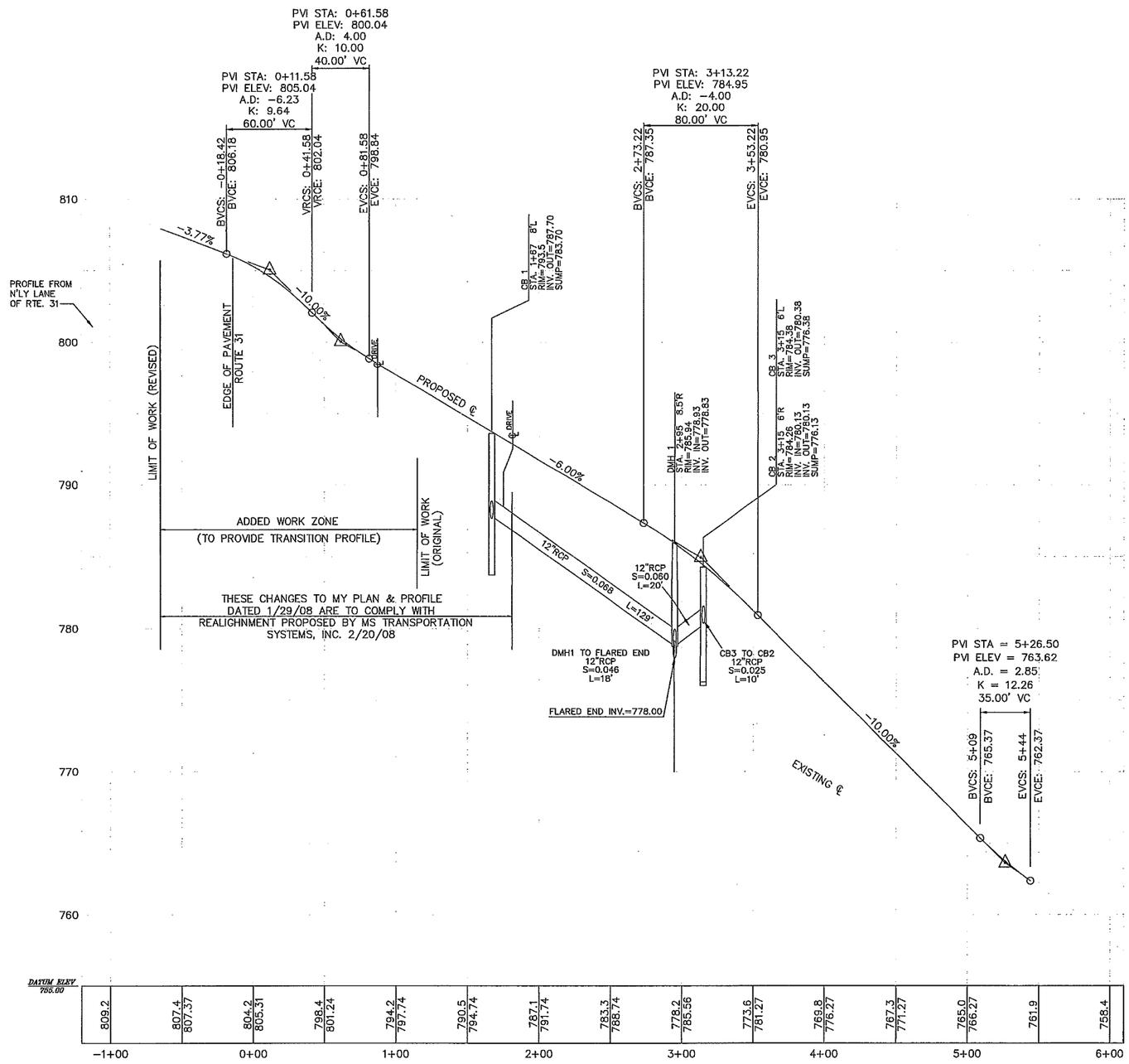
OFFSITE IMPROVEMENTS
GREENWOOD II
HOLDEN, MASSACHUSETTS

PREPARED FOR
BLAIR ENTERPRISES, INC.
87 MAIN STREET
RUTLAND, MASSACHUSETTS 01543

ENGINEER / SURVEYOR
JAMES B. KALLOCH P.L.S. & P.E.
WACHUSETT STREET
RUTLAND, MA 01543
(508) 886-4040

GRAPHIC SCALE
30 0 15 30 60 120
(IN FEET)
1 inch = 30 ft.

DRAWN BY:	MSM	DATE:	01-29-08
CHECKED BY:	JBK	DRAWING NO.:	
JOB NO.:	GREEN2	SHEET	2 OF 4



PROFILE OF UNION ST.

OFFSITE IMPROVEMENTS
GREENWOOD II
HOLDEN, MASSACHUSETTS

PREPARED FOR
BLAIR ENTERPRISES, INC.
87 MAIN STREET
RUTLAND, MASSACHUSETTS 01543

NOTE

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PROFILE
HORIZONTAL SCALE: 1"=40'
VERTICAL SCALE: 1"=4'

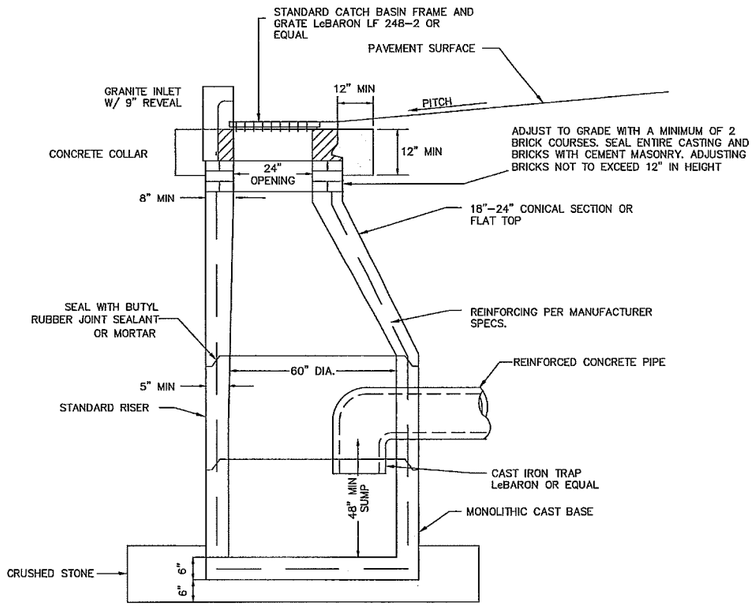
GREEN INTERNATIONAL AFFILIATES, INC.
CIVIL AND STRUCTURAL ENGINEERS

ENGINEER / SURVEYOR
JAMES B. KALLOCH P.L.S. & P.E.
WACHUSETT STREET
RUTLAND, MA 01543
(508) 886-4040

GRAPHIC SCALE
30 0 15 30 60 120
(IN FEET)
1 inch = 30 ft.

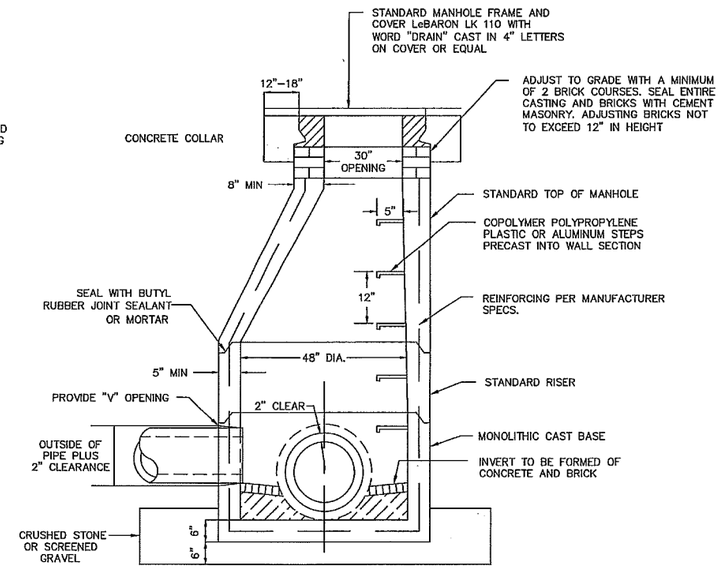
REVISION #2
1/26/18

DRAWN BY:	MSM	DATE:	01-29-08
CHECKED BY:	JBK	DRAWING NO.:	
JOB NO.:	GREEN2	SHEET	3 OF 4



CATCH BASIN

NOT TO SCALE



DRAIN MANHOLE

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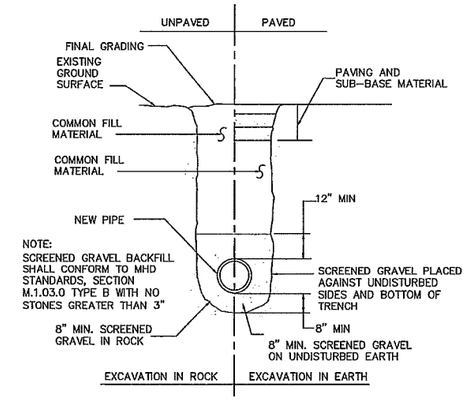

TYPICAL TRENCH DETAIL

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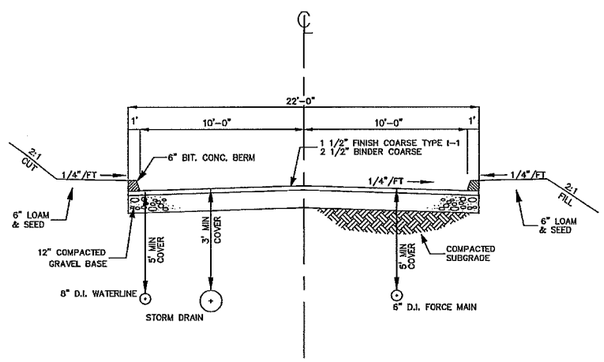
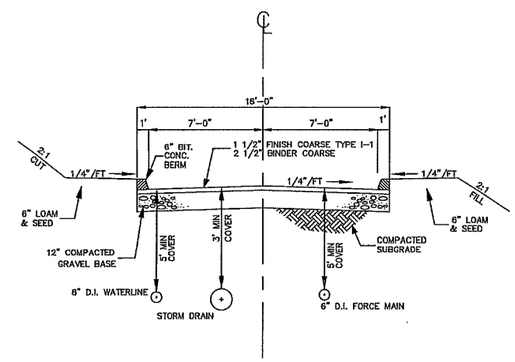


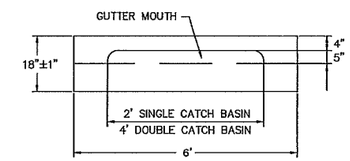
TYPICAL ROADWAY CROSS - SECTION
20' WIDE TRAVELED WAY

NOT TO SCALE



TYPICAL ROADWAY CROSS - SECTION
14' WIDE TRAVELED WAY

NOT TO SCALE



GRANITE INLET DETAIL

NOT TO SCALE

DETAIL SHEET

OFFSITE IMPROVEMENTS
GREENWOOD II
HOLDEN, MASSACHUSETTS

PREPARED FOR
BLAIR ENTERPRISES, INC.
87 MAIN STREET
RUTLAND, MASSACHUSETTS 01543

CALL
BEFORE YOU DIG
DIG-SAFE
1-888-344-7233
48 HR. NOTICE REQUIRED

ENGINEER / SURVEYOR
JAMES B. KALLOCH P.L.S. & P.E.
WACHUSETT STREET
RUTLAND, MA 01543
(508) 886-4040

GRAPHIC SCALE
1 0 1/2 1 2 4
(INCHES)
AS NOTED

DRAWN BY:	MSM	DATE:	01-29-08
CHECKED BY:	JBK	DRAWING NO.:	
JOB NO.:	GREEN2	SHEET	4 OF 4