N/F
MIKEL A. & ANTOINETTE I.
MATISOO
BK. 21323 PG. 319

400' SECONDARY ZONE

STAKE (FOUND)

RE-ROD (FOUND)

IRON PIPE (FOUND)

STAKES SET ON TOWN LINE

TREELINE

RE-ROD (FOUND)

DRILL HOLE (FOUND)

EDGE OF TRIBUTARY

200' PRIMARY ZONE

STAKES SET ON PROPERTY LINE

WETLAND LINE

200' PRIMARY ZONE

N/F
EDWARD R.
LEAHY
BK. 46647 PG. 21
PL. BK. 112 PL. 112

APPROXIMATE TOWN LINE

RUTLAND

HOLDEN

WETLAND LINE

WETLANDS

M.H.B (FOUND)

MAIN STREET
1950 STATE HIGHWAY LAYOUT

CONSTRUCTION ENTRANCE

TBM-1
NAIL IN 40" OAK
EL=1002.05

DRILL HOLE (FOUND)

M.H.B's (FOUND)

IRON PIPE (FOUND)

RE-ROD (FOUND)

STAKE (FOUND)

EXPOSED LEDGE

400' SECONDARY ZONE

N/F
ROBERT A. & KATHLEEN M.
PETERSON
BK. 12683 PG. 4
PARCEL A
PL. BK. 616 PL. 86

WETLAND LINE

200' PRIMARY ZONE

GRAPHIC SCALE
50 0 50 100
(IN FEET)
1 inch = 50 ft.

MARK A. ELBAG, JR., PE
PROFESSIONAL ENGINEER REG #48449

TYPICAL LEGEND

PROPERTY LINE	
SETBACK	
EASEMENT	
STONEWALL	
TREE LINE	
WELL	W
EXISTING CONTOUR	100
PROPOSED CONTOUR	100
SPOT ELEVATION	99x50
WATTLE	
WETLAND BUFFER	
SILT FENCE	
HAYBALE	
BENCHMARK	

STORMWATER SITE PLAN

PREPARED FOR:
122A REALTY LLC
274 OAK STREET
SHREWSBURY, MA 01545

PROPERTY ADRESS:
2400 MAIN STREET
HOLDEN, MA 01520
ASSESSOR MAP 82 PARCEL 27

PLAN TITLE:
EXISTING CONDITIONS

M.A. ELBAG ENGINEERING
P.O. BOX 636
RUTLAND, MA 01543
Phone:(508) 726-1199
maelbag@gmail.com

Jan 18, 2024 | Rev: | Sheet 1

SOIL EVALUATOR: MARK A. ELBAG, JR. - PERC TEST BY: MARK A. ELBAG, JR.
TEST WITNESSED BY: DATE PERFORMED: 1/26/2024

DEEP OBSERVATION HOLE NUMBER: 1

DEPTH FROM SURFACE (INCHES)	SOIL HORIZON/ LAYER	SOIL MATRIX: COLOR-MOIST (MUNSELL)	REDOXIMORPHIC FEATURES (MOTTLES)			SOIL TEXTURE (USDA)	COARSE FRAGMENTS % BY VOLUME		SOIL STRUCTURE	SOIL CONSISTENCE (MOIST)
			DEPTH	COLOR	PERCENT		GRAVEL	COBBLES & STONES		
9"	A	10YR3/2				SL	2%	2%	M	FRIABLE
29"	B	5YR4/6				SL	2%	15%	M	FRIABLE
100"	C	2.5Y5/2	56"	2.5Y5/3	2	SL	10%	30%	M	FRIABLE

DEEP OBSERVATION HOLE NUMBER: 2

DEPTH FROM SURFACE (INCHES)	SOIL HORIZON/ LAYER	SOIL MATRIX: COLOR-MOIST (MUNSELL)	REDOXIMORPHIC FEATURES (MOTTLES)			SOIL TEXTURE (USDA)	COARSE FRAGMENTS % BY VOLUME		SOIL STRUCTURE	SOIL CONSISTENCE (MOIST)
			DEPTH	COLOR	PERCENT		GRAVEL	COBBLES & STONES		
8"	A	10YR2/2				SL	2%	2%	M	FRIABLE
26"	B	5YR4/6				SL	2%	10%	M	FRIABLE
89"	C	2.5Y5/2	58"	5YR4/4	2	SL	10%	30%	M	FRIABLE

DEEP OBSERVATION HOLE NUMBER: 3

DEPTH FROM SURFACE (INCHES)	SOIL HORIZON/ LAYER	SOIL MATRIX: COLOR-MOIST (MUNSELL)	REDOXIMORPHIC FEATURES (MOTTLES)			SOIL TEXTURE (USDA)	COARSE FRAGMENTS % BY VOLUME		SOIL STRUCTURE	SOIL CONSISTENCE (MOIST)
			DEPTH	COLOR	PERCENT		GRAVEL	COBBLES & STONES		
8"	A	10YR2/2				SL	2%	2%	M	FRIABLE
27"	B	5YR4/6				SL	2%	10%	M	FRIABLE
80"	C	2.5Y5/2	56"	5YR4/4	2	SL	10%	30%	M	FRIABLE

MARK A. ELBAG, JR., PE
PROFESSIONAL ENGINEER REG #48449

TYPICAL LEGEND

PROPERTY LINE	
SETBACK	
EASEMENT	
STONEWALL	
TREE LINE	
WELL	W
EXISTING CONTOUR	100
PROPOSED CONTOUR	100
SPOT ELEVATION	99x50
WATTLE	
WETLAND BUFFER	
SILT FENCE	
HAYBALE	
BENCHMARK	

STORMWATER SITE PLAN

PREPARED FOR:
122A REALTY LLC
274 OAK STREET
SHREWSBURY, MA 01545

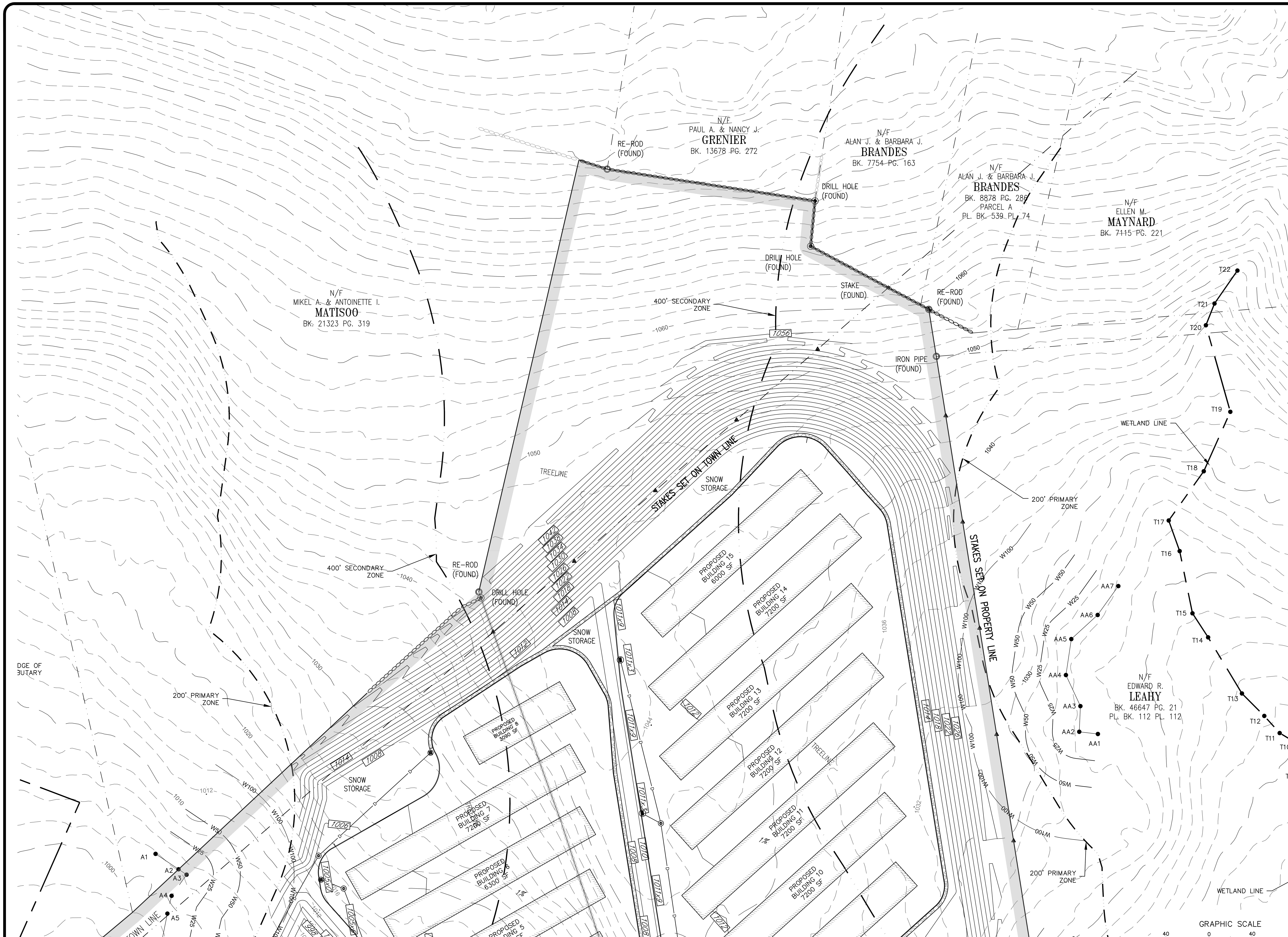
PROPERTY ADRESS:
2400 MAIN STREET
HOLDEN, MA 01520
ASSESSOR MAP 82 PARCEL 27

PLAN TITLE:
GRADING PLAN

M.A. ELBAG ENGINEERING
P.O. BOX 636
RUTLAND, MA 01543
Phone:(508) 726-1199
maelbag@gmail.com

Jan 18, 2024 | Sheet 2

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



MARK A. ELBAG, JR., PE
PROFESSIONAL ENGINEER REG #48449

TYPICAL LEGEND

PROPERTY LINE	
SETBACK	
EASEMENT	
STONEWALL	
TREE LINE	
WELL	W
EXISTING CONTOUR	100
PROPOSED CONTOUR	100
SPOT ELEVATION	99x50
WATTLE	
WETLAND BUFFER	
SILT FENCE	
HAYBALE	
BENCHMARK	

STORMWATER SITE PLAN

PREPARED FOR:
122A REALTY LLC
274 OAK STREET
SHREWSBURY, MA 01545

PROPERTY ADRESS:
2400 MAIN STREET
HOLDEN, MA 01520
ASSESSOR MAP 82 PARCEL 27

PLAN TITLE:
GRADING PLAN

M.A. ELBAG ENGINEERING
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Jan 18, 2024

Sheet 3

EDGE OF TRIBUTARY

200' PRIMARY ZONE

APPROXIMATE TOWN LINE

RUTLAND — HOLDEN

WETLAND LINE

WETLANDS

LEVEL SPREADER

10' X 10' SPILLWAY EL=1001.90

A13 OCS 1
6' DIA CB
TOP 2'X4' OPENING=1001.80
(4) 7" DIA ORIFICE=1000.20
(2) 5" DIA ORIFICE=999.00
(1) 3" DIA ORIFICE=998.00
18" OUT=995.00
SUMP=993.00

LEVEL SPREADER

18" ADS L=60'
S=0.010 FT/FT

18" FES 2
INV=994.40

12" ADS L=176'
S=0.010 FT/FT

12" FES 3
INV=998.00

18" ADS L=46'
S=0.008 FT/FT

DMH 4 (6' DIA)
RIM=1003.80
18" INV (I) N=999.03
18" INV (I) NE=1000.30
15" INV (I) SE=998.89
12" INV (I) S=1000.25
24" INV (O)=998.29

24" FES 1
INV=998.00

12" ADS L=24'
S=0.010 FT/FT

STU 1
RIM=1004.00
24" INV (I)=998.22
24" INV (O)=998.22

DMH 10
RIM=1006.00
12" INV (I)=1001.10
12" INV (O)=999.76

SNOW STORAGE

SNOW STORAGE

12" ADS L=136'
S=0.01 FT/FT

DI 1
RIM=1007.00
8" INV (I)=1004.00
12" INV (O)=1003.75

PROPOSED BUILDING 8 3000 SF

PROPOSED BUILDING 7 7200 SF

PROPOSED BUILDING 6 6300 SF

3" WIDE X 3' DEEP DRAIN WITH (2) 6" DIA PERFORATED PIPE

CB 12
RIM=1005.00
12" INV (O)=1001.50

DMH 9
RIM=1005.20
INV (I)=1001.30
12" INV (O)=1001.20

12" ADS L=92'
S=0.008 FT/FT

CB 11
RIM=1005.00
12" INV (O)=1001.50

DMH 8
RIM=1005.20
12" INV (I) N=1000.46
12" INV (I) W=1001.20
18" INV (O)=1000.36

18" ADS L=107'
S=0.008 FT/FT

PROPOSED BUILDING 5 6300 SF

PROPOSED BUILDING 4 6300 SF

DMH 3
RIM=1007.80
18" INV (I)=1004.30
12" INV (I)=1004.30
18" INV (O)=1004.20

18" ADS L=230'
S=0.017 FT/FT

PROPOSED BUILDING 3 6300 SF

CB 10
RIM=1005.00
12" INV (O)=1001.50

DMH 7
RIM=1005.20
18" INV (I) N=999.50
12" INV (I) W=1001.20
18" INV (O)=999.40

PROPOSED BUILDING 2 6300 SF

DCB 8 (2' COVER)
RIM=1003.24
12" INV (O)=1000.24

15" ADS L=51'
S=0.014 FT/FT

12" ADS L=69'
S=0.022 FT/FT

12" ADS L=52'
S=0.014 FT/FT

CB 9
RIM=1003.00
12" INV (O)=1000.50

DMH 6
RIM=1002.50
12" INV (I) NE=999.50
12" INV (I) SE=999.50
15" INV (O)=999.40

18" FES
INV=995.40

12" ADS L=109'
S=0.010 FT/FT

DMH 5
RIM=1003.80
12" INV (I) NE=1001.20
12" INV (I) SE=1001.12
12" INV (O)=1001.02

PROPOSED BUILDING 1
7200 SF
SLAB=1005.81 MIN
INV IN = 1003.81

PT

PROPOSED SEPTIC TANK

12" ADS L=172'
S=0.008 FT/FT

DCB 6 (2' COVER)
RIM=1005.50
12" INV (O)=1002.50

DCB 7
RIM=1000.00
12" INV (O)=996.50

MAINTENANCE BUILDING 1800 SF

DCB 1
RIM=1011.30
15" INV (O)=1007.80

15" ADS L=151'
S=0.008 FT/FT

PROPOSED BUILDING 13 7200 SF

PROPOSED BUILDING 12 7200 SF

DCB 2
RIM=1011.30
15" INV (O)=1007.80

DMH 1
RIM=1011.50
15" INV (I) N=1006.59
15" INV (I) NW=1007.50
18" INV (O)=1006.49

18" ADS L=124'
S=0.008 FT/FT

PROPOSED BUILDING 11 7200 SF

PROPOSED BUILDING 10 7200 SF

3" WIDE X 3' DEEP DRAIN WITH (2) 8" DIA PERFORATED PIPE

CB 3
RIM=1011.30
12" INV (O)=1007.80

DMH 2
RIM=1011.50
18" INV (I) N=1005.50
12" INV (I) NW=1007.50
18" INV (O)=1004.85

18" ADS L=81'
S=0.014 FT/FT

PROPOSED BUILDING 9 7200 SF

SNOW STORAGE

12" ADS L=81'
S=0.015 FT/FT

DCB 4
RIM=1008.90
12" INV (O)=1005.40

12" ADS
24" MIN COVER

DCB 5
RIM=1005.50
12" INV (O)=1002.00

12" ADS L=80'
S=0.0 FT/FT

DI 2
RIM=1007.50
8" INV (I)=1004.50
12" INV (O)=1004.25

12" FES 4
INV=1004.00

LEVEL SPREADER

400' SECONDARY ZONE

N/F
ROBERT A. &
KATHLEEN M.
PETERSON
BK. 12683 PG. 4
PARCEL A
PL. BK. 616 PL. 86

RTY LINE

200' PRIMARY ZONE

MAIN STREET
1950 STATE HIGHWAY LAYOUT

TBM-1
NAIL IN 40" OAK
EL=1002.05

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

MARK A. ELBAG, JR., PE
PROFESSIONAL ENGINEER REG #48449

TYPICAL LEGEND

PROPERTY LINE	
SETBACK	
EASEMENT	
STONEWALL	
TREE LINE	
WELL	W
EXISTING CONTOUR	100
PROPOSED CONTOUR	100
SPOT ELEVATION	99x50
WATTLE	
WETLAND BUFFER	
SILT FENCE	
HAYBALE	
BENCHMARK	

STORMWATER SITE PLAN

PREPARED FOR:
122A REALTY LLC
274 OAK STREET
SHREWSBURY, MA 01545

PROPERTY ADRESS:
2400 MAIN STREET
HOLDEN, MA 01520
ASSESSOR MAP 82 PARCEL 27

PLAN TITLE:
DRAINAGE PLAN

M.A. ELBAG ENGINEERING
P.O. BOX 636
RUTLAND, MA 01543
Phone:(508) 726-1199
maelbag@gmail.com

Jan 18, 2024 | **Sheet 4**

N/F
PAUL A. & NANCY J.
GRENIER
BK. 13678 PG. 272

N/F
ALAN J. & BARBARA J.
BRANDES
BK. 7754 PG. 163

N/F
ALAN J. & BARBARA J.
BRANDES
BK. 8878 PG. 286
PARCEL A
PL. BK. 539 PL. 74

N/F
ELLEN M.
MAYNARD
BK. 7115 PG. 221

N/F
MIKEL A. & ANTOINETTE I.
MATISOO
BK. 21323 PG. 319

N/F
EDWARD R.
LEAHY
BK. 46647 PG. 21
PL. BK. 112 PL. 112

RE-ROD (FOUND)
DRILL HOLE (FOUND)
STAKE (FOUND)
IRON PIPE (FOUND)

400' SECONDARY ZONE
200' PRIMARY ZONE
STAKES SET ON TOWN LINE
STAKES SET ON PROPERTY LINE
WETLAND LINE
TOWN LINE
SNOW STORAGE

PROPOSED BUILDING 15 6000 SF
PROPOSED BUILDING 14 7200 SF
PROPOSED BUILDING 13 7200 SF
PROPOSED BUILDING 12 7200 SF
PROPOSED BUILDING 11 7200 SF
PROPOSED BUILDING 10 7200 SF
PROPOSED BUILDING 9 7200 SF
PROPOSED BUILDING 8 3200 SF
PROPOSED BUILDING 7 7200 SF
PROPOSED BUILDING 6 6300 SF
PROPOSED BUILDING 5 SF

3' WIDE X 3' DEEP DRAIN WITH (2) 8" DIA PERFORATED PIPE
3' WIDE X 3' DEEP DRAIN WITH (2) 6" DIA PERFORATED PIPE

DCB 1
RIM=1011.30
15" INV (O)=1007.80

DCB 2
RIM=1011.30
15" INV (O)=1007.80

DMH 1
RIM=1011.50
15" INV (I) N=1006.59
15" INV (I) NW=1007.50
18" INV (O)=1006.49

DI 1
RIM=1007.00
8" INV (I)=1004.00
12" INV (O)=1003.75

DMH 10
RIM=1006.00
12" INV (I)=1001.10
12" INV (O)=999.76

CB 12
RIM=1005.00
12" INV (O)=1001.50

DMH 9
RIM=1005.20
INV (I)=1001.30
12" INV (O)=1001.20

15" ADS L=151'
S=0.008 FT/FT

18" ADS L=124'
S=0.008 FT/FT

12" ADS L=136
S=0.01 FT/FT

T22 T21 T20 T19 T18 T17 T16 T15 T14 T13 T12 T11 T10 T9

AA7 AA6 AA5 AA4 AA3 AA2 AA1

A1 A2 A3 A4 A5

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

MARK A. ELBAG, JR., PE
PROFESSIONAL ENGINEER REG #48449

TYPICAL LEGEND

PROPERTY LINE	
SETBACK	
EASEMENT	
STONEWALL	
TREE LINE	
WELL	W
EXISTING CONTOUR	100
PROPOSED CONTOUR	100
SPOT ELEVATION	99x50
WATTLE	
WETLAND BUFFER	
SILT FENCE	
HAYBALE	
BENCHMARK	

STORMWATER SITE PLAN

PREPARED FOR:
122A REALTY LLC
274 OAK STREET
SHREWSBURY, MA 01545

PROPERTY ADRESS:
2400 MAIN STREET
HOLDEN, MA 01520
ASSESSOR MAP 82 PARCEL 27

PLAN TITLE:
DRAINAGE PLAN

M.A. ELBAG ENGINEERING
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RUTLAND, MA 01543
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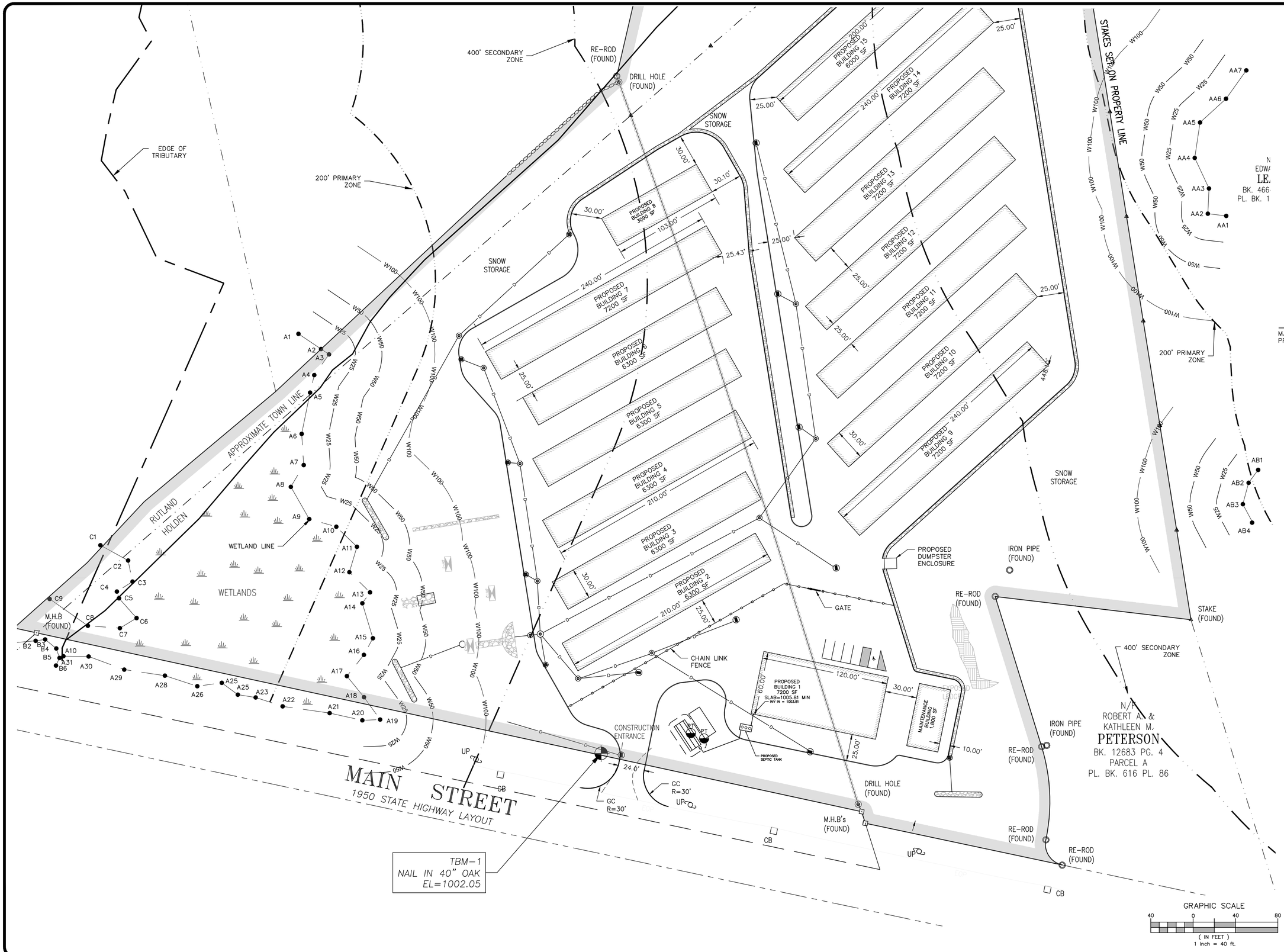
Jan 18, 2024 | *Sheet 5*



MARK A. ELBAG, JR., PE
PROFESSIONAL ENGINEER REG #48449

TYPICAL LEGEND

PROPERTY LINE	
SETBACK	
EASEMENT	
STONEWALL	
TREE LINE	
WELL	W
EXISTING CONTOUR	100
PROPOSED CONTOUR	100
SPOT ELEVATION	99x50
WATTLE	
WETLAND BUFFER	
SILT FENCE	
HAYBALE	
BENCHMARK	

STORMWATER SITE PLAN

PREPARED FOR:
122A REALTY LLC
274 OAK STREET
SHREWSBURY, MA 01545

PROPERTY ADRESS:
2400 MAIN STREET
HOLDEN, MA 01520
ASSESSOR MAP 82 PARCEL 27

PLAN TITLE:
LAYOUT PLAN

M.A. ELBAG ENGINEERING
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Phone:(508) 726-1199
maelbag@gmail.com

Jan 18, 2024 | *Sheet 6*

N/F
MIKEL A. & ANTOINETTE I.
MATISOO
BK. 21323 PG. 319

N/F
PAUL A. & NANCY J.
GRENIER
BK. 13678 PG. 272

N/F
ALAN J. & BARBARA J.
BRANDES
BK. 7754 PG. 163

N/F
ALAN J. & BARBARA J.
BRANDES
BK. 8878 PG. 286
PARCEL A
PL. BK. 539 PL. 74

N/F
ELLEN M.
MAYNARD
BK. 7115 PG. 221

N/F
EDWARD R.
LEAHY
BK. 46647 PG. 21
PL. BK. 112 PL. 112

RE-ROD (FOUND)
DRILL HOLE (FOUND)
DRILL HOLE (FOUND)
STAKE (FOUND)
RE-ROD (FOUND)
IRON PIPE (FOUND)
RE-ROD (FOUND)
DRILL HOLE (FOUND)

400' SECONDARY ZONE
200' PRIMARY ZONE
EDGE OF TRIBUTARY
STAKES SET ON TOWN LINE
STAKES SET ON PROPERTY LINE
WETLAND LINE

SNOW STORAGE
SNOW STORAGE
SNOW STORAGE

PROPOSED BUILDING 15 6000 SF
PROPOSED BUILDING 14 7200 SF
PROPOSED BUILDING 13 7200 SF
PROPOSED BUILDING 12 7200 SF
PROPOSED BUILDING 11 7200 SF
PROPOSED BUILDING 10 7200 SF
PROPOSED BUILDING 8 3000 SF
PROPOSED BUILDING 7 7200 SF
PROPOSED BUILDING 6 6300 SF

30.00' 200.00' 25.00'
240.00' 25.00'
30.00' 30.10'
103.00' 25.43'
25.00' 44.85'

A1 A2 A3 A4 A5
W100 W50 W25

T21 T20 T18 T17 T16 T15 T14
AA7 AA6 AA5 AA4 AA3 AA2 AA1

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

TYPICAL LEGEND

PROPERTY LINE	
SETBACK	
EASEMENT	
STONEWALL	
TREE LINE	
WELL	W
EXISTING CONTOUR	100
PROPOSED CONTOUR	100
SPOT ELEVATION	99x50
WATTLE	
WETLAND BUFFER	
SILT FENCE	
HAYBALE	
BENCHMARK	

COMMONWEALTH OF MASSACHUSETTS
MARK A. ELBAG, JR.
CIVIL
REGISTERED PROFESSIONAL ENGINEER

MARK A. ELBAG, JR., PE
PROFESSIONAL ENGINEER REG #48449

STORMWATER SITE PLAN

PREPARED FOR:
122A REALTY LLC
274 OAK STREET
SHREWSBURY, MA 01545

PROPERTY ADRESS:
2400 MAIN STREET
HOLDEN, MA 01520
ASSESSOR MAP 82 PARCEL 27

PLAN TITLE:
LAYOUT PLAN

M.A. ELBAG ENGINEERING
P.O. BOX 636
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Phone:(508) 726-1199
maelbag@gmail.com

Jan 18, 2024 | *Sheet 7*

EDGE OF TRIBUTARY

200' PRIMARY ZONE

APPROXIMATE TOWN LINE

RUTLAND — HOLDEN

WETLAND LINE

WETLANDS

M.H.B (FOUND)

SILT FENCE& WATTLE (TYP)

SNOW STORAGE

PROPOSED BUILDING 8 6300 SF

PROPOSED BUILDING 7 7200 SF

PROPOSED BUILDING 6 6300 SF

PROPOSED BUILDING 5 6300 SF

PROPOSED BUILDING 4 6300 SF

PROPOSED BUILDING 3 6300 SF

PROPOSED BUILDING 2 6300 SF

PROPOSED BUILDING 13 7200 SF

PROPOSED BUILDING 12 7200 SF

PROPOSED BUILDING 11 7200 SF

PROPOSED BUILDING 10 7200 SF

PROPOSED BUILDING 9 7200 SF

PROPOSED BUILDING 1 7200 SF SLAB#1005.81 MIN INV IN = 1003.81

PROPOSED SEPTIC TANK

MAINTENANCE BUILDING 1800 SF

MAIN STREET
1950 STATE HIGHWAY LAYOUT

TBM-1
NAIL IN 40" OAK
EL=1002.05

UP

CB

INSTALL SILT SACK

STABILIZED CONSTRUCTION ENTRANCE

M.H.B's (FOUND)

DRILL HOLE (FOUND)

IRON PIPE (FOUND)

RE-ROD (FOUND)

STAKE (FOUND)

400' SECONDARY ZONE

N/F
ROBERT A. & KATHLEEN M.
PETERSON
BK. 12683 PG. 4
PARCEL A
PL. BK. 616 PL. 86

RTY LINE

MARK A. ELBAG, JR.
CIVIL
PROFESSIONAL ENGINEER

MARK A. ELBAG, JR., PE
PROFESSIONAL ENGINEER REG #48449

TYPICAL LEGEND

PROPERTY LINE	
SETBACK	
EASEMENT	
STONEWALL	
TREE LINE	
WELL	W
EXISTING CONTOUR	100
PROPOSED CONTOUR	100
SPOT ELEVATION	99x50
WATTLE	
WETLAND BUFFER	
SILT FENCE	
HAYBALE	
BENCHMARK	

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

STORMWATER SITE PLAN

PREPARED FOR:
122A REALTY LLC
274 OAK STREET
SHREWSBURY, MA 01545

PROPERTY ADRESS:
2400 MAIN STREET
HOLDEN, MA 01520
ASSESSOR MAP 82 PARCEL 27

PLAN TITLE:
EROSION CONTROL PLAN

M.A. ELBAG ENGINEERING
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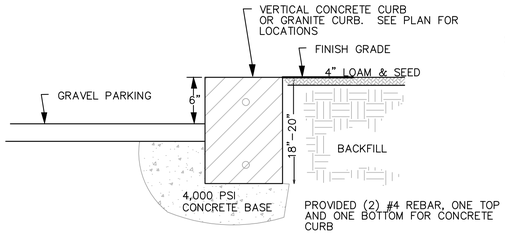
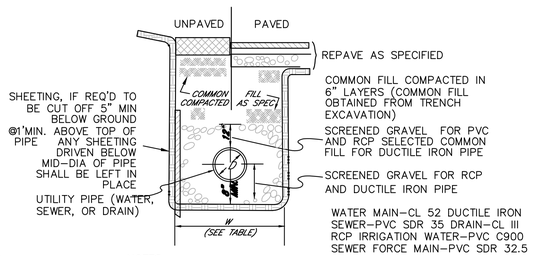
RUTLAND, MA 01543
Phone:(508) 726-1199
maelbag@gmail.com

Jan 18, 2024 | Sheet 8



VERTICAL CONCRETE/GRANITE CURB
(NOT TO SCALE)

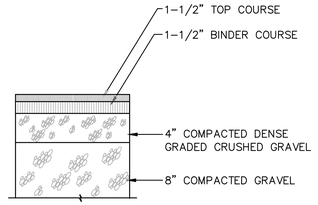


NOTES:

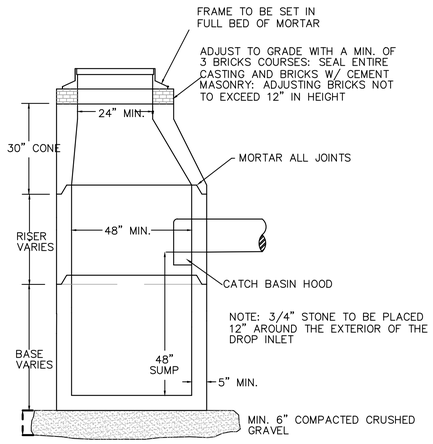
1) ON ALL PIPE TRENCHES, >100' IN LENGTH, CLAY DAMS SHALL BE PLACED (BOTTOM OF TRENCH TO TOP OF PIPE) HALFWAY BETWEEN STRUCTURES
2) TRENCH DEWATERING SHALL NOT BE DISCHARGED INTO RESOURCE AREAS. ALL DEWATERING DISCHARGE SHALL BE TO TEMPORARY SEDIMENTATION BASINS. (20'x20'x1' DEEP MINIMUM)
3) ALL DRAIN PIPES SHALL TO BE CLASS V RCP UNLESS GREATER THAN 42" OF COVER IS PROVIDED IN SUCH CASE CLASS III RCP SHALL BE ALLOWED.

TYPICAL TRENCH DETAIL
(NOT TO SCALE)

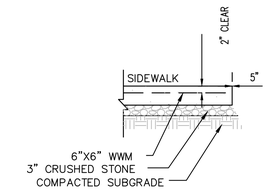
TRENCH WIDTH, W		
D DIAMETER OF PIPE	W UNSHEETED	W SHEETED
TO 12"	3'	4'
14" TO 24"	4'	5'
30" TO 36"	5'	6'



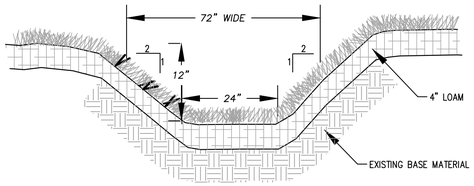
BITUMINOUS CONC. DETAIL
(NOT TO SCALE)



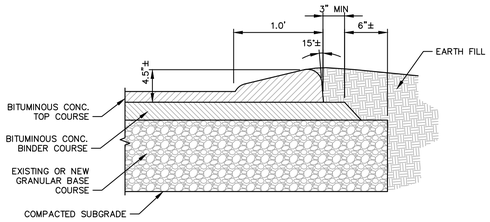
DRAIN CATCH BASIN DETAIL
(NOT TO SCALE)



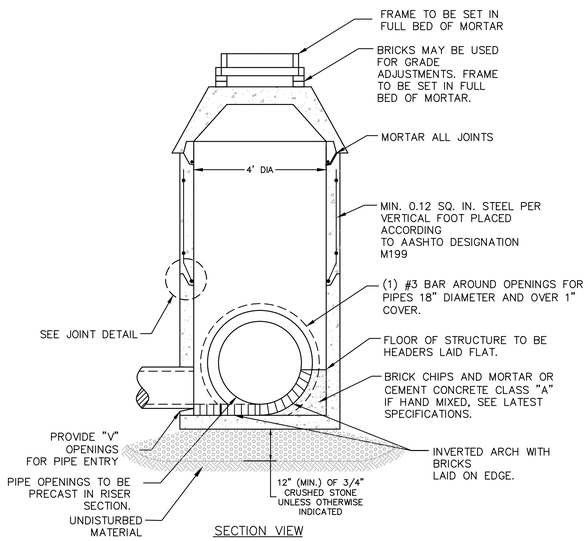
MONOLITHIC CONCRETE SIDEWALK DETAIL
(NOT TO SCALE)



WATER QUALITY SWALE
(NOT TO SCALE)



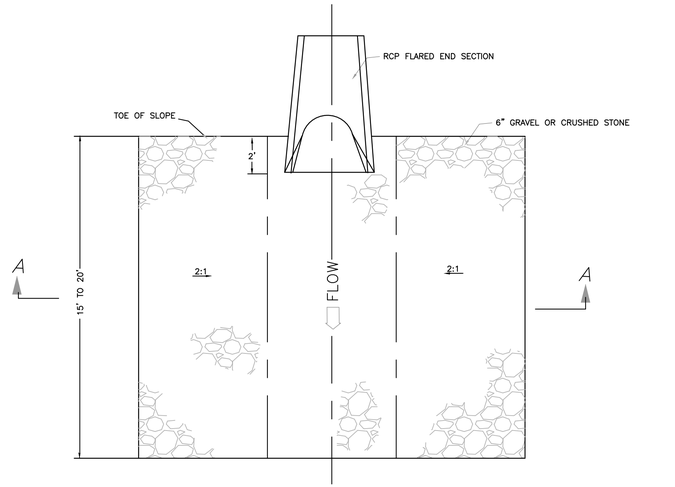
BITUMINOUS BERM DETAIL
(NOT TO SCALE)



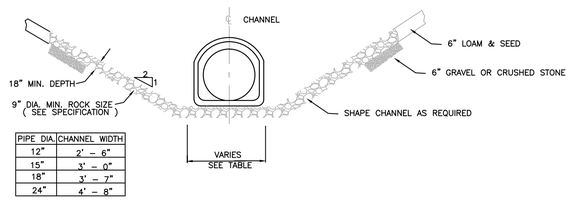
SECTION VIEW

NOTE: FOR DESCRIPTIONS, MATERIALS AND CONSTRUCTION METHODS SEE LATEST SPECIFICATIONS.

PRECAST DRAIN MANHOLE
(NOT TO SCALE)

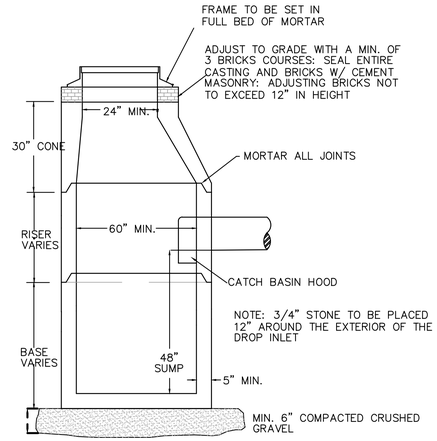


PLAN VIEW

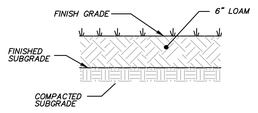


PIPE DIA.	CHANNEL WIDTH
12"	2' - 6"
15"	3' - 0"
18"	3' - 7"
24"	4' - 8"

OUTLET EROSION PROTECTION DETAIL
(NOT TO SCALE)

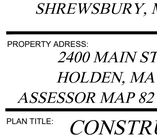


DOUBLE GRATE CATCH BASIN DETAIL
(NOT TO SCALE)



NOTE: EROSION CONTROL FABRIC (SC150 BY NOR AMERICAN GREEN, OR EQUAL) SHALL BE INSTALL ALL SLOPES OF 3H:1V OR STEEPER.

LOAM AND SEED DETAIL
(NOT TO SCALE)



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

MARK A. ELBAG, JR., PE
PROFESSIONAL ENGINEER REG #48449

STORMWATER SITE PLAN

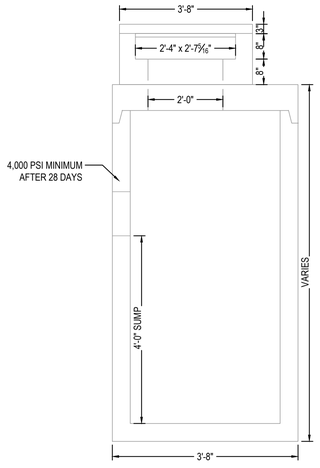
PREPARED FOR:
122A REALTY LLC
274 OAK STREET
SHREWSBURY, MA 01545

PROPERTY ADRESS:
2400 MAIN STREET
HOLDEN, MA 01520
ASSESSOR MAP 82 PARCEL 27

PLAN TITLE: *CONSTRUCTION DETAILS*

M.A. ELBAG ENGINEERING
P.O. BOX 636
RUTLAND, MA 01543
Phone:(508) 726-1199
maelbag@gmail.com

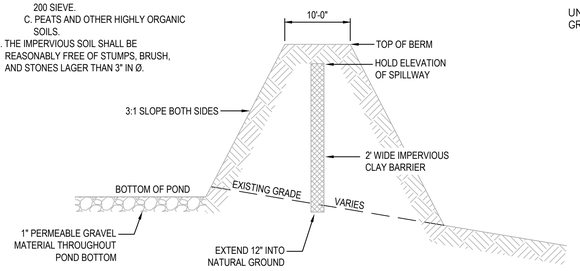
Jan 18, 2024 | *Rev:* | *Sheet 9*



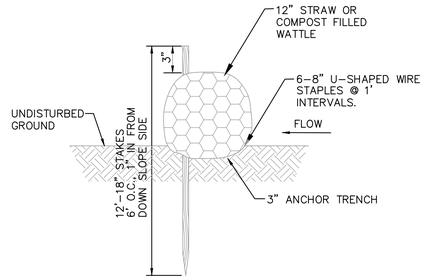
SHEA CONCRETE DROP INLT TYPE "C" OR EQUAL

Drop Inlet Detail
(NOT TO SCALE)

NOTE:
1. THE IMPERVIOUS CLAY BARRIER MUST BE USED IN THE INFILTRATION BASIN AND THE DETENTION BASIN.
2. IMPERVIOS SOILS SHALL HAVE THE PHYSICAL CHARACTORISTIC OF ONE OF THE FOLLOWING, UNDER AASHTO M 145:
   A. A-4, A-5, A-6 OR A-7 SOILS
   B. A-2 SOILS CONTAINING MORE THAN 20% BY WEIGHT PASSING THE NO. 200 SIEVE.
   C. PEATS AND OTHER HIGHLY ORGANIC SOILS.
3. THE IMPERVIOUS SOIL SHALL BE REASONABLY FREE OF STUMPS, BRUSH, AND STONES LAGER THAN 3" IN Ø.



Berm Detail
(NOT TO SCALE)



EROSION CONTROL DETAIL
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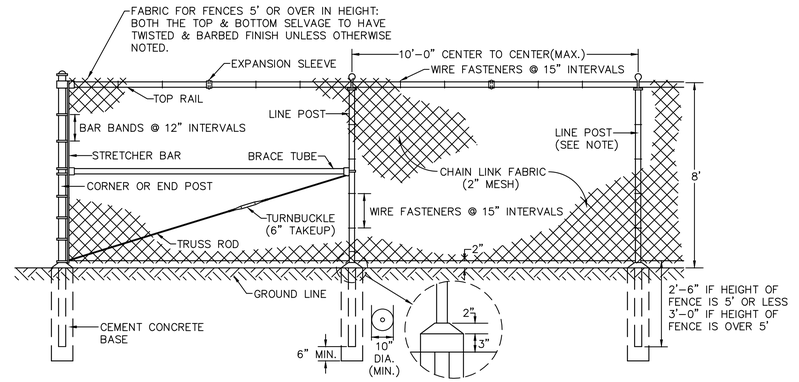
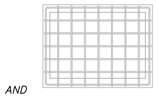


CHAIN LINK FENCE DETAIL WITH TOP RAIL
(NOT TO SCALE)

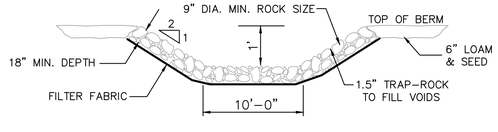
NOTE: LINE POSTS TO BE SPACED 10'-0" CENTER TO CENTER MAXIMUM EXCEPT ON CURVES WHERE THEY SHALL BE SPACED AS FOLLOWS:

RADIUS OF CURVE	MAXIMUM SPACING
100' OR LESS	5'-0" C. TO C.
100' TO 200'	6'-0" C. TO C.
200' TO 500'	8'-0" C. TO C.

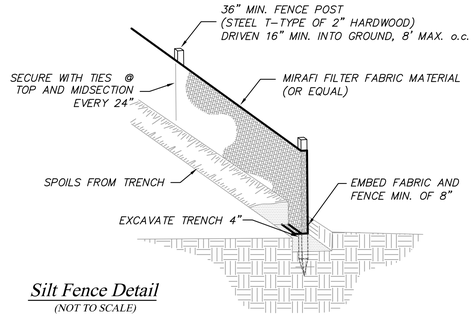


WELD ALL BARS AT INTERSECTIONS AND ENDS.
MECHANICALLY FASTEN TRASH RACK TO CONCRETE.
GRIND ALL EDGES AND PAINT.

FOR USE AT THE DETENTION POND OUTFLOW STRUCTURE TOP



Emergency Spillway Detail
(NOT TO SCALE)



Silt Fence Detail
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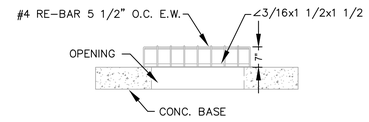

Trash Rack Detail
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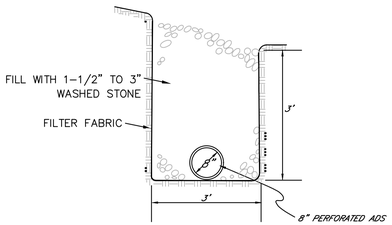
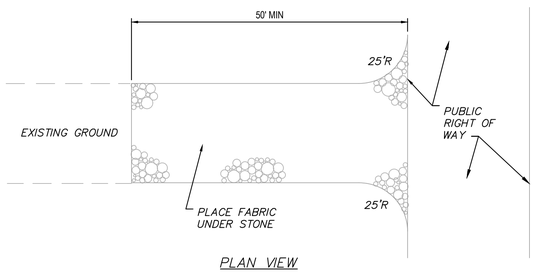


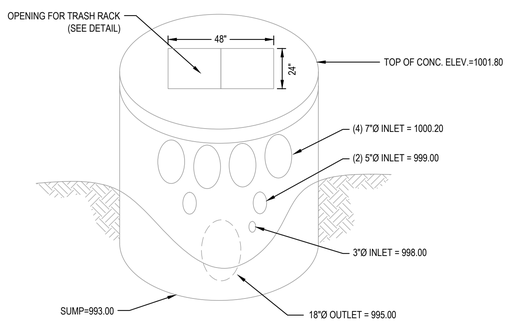
PERIMETER TRENCH DETAIL
(NOT TO SCALE)



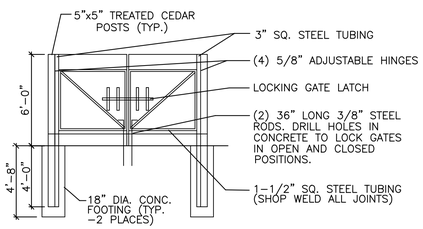
PLAN VIEW

1. LENGTH – MINIMUM OF 50'.
2. WIDTH – 10' MINIMUM, SHOULD BE FLARED AT THE EXISTING ROAD TO PROVIDE A TURNING RADIUS.
3. GEOTEXTILE FABRIC (MIRAFI 180N OR EQUAL) SHALL BE PLACED OVER THE EXISTING GROUND PRIOR TO PLACING STONE.
4. STONE – CRUSHED AGGREGATE (2" TO 3") OR RECLAIMED OR RECYCLED CONCRETE OR EQUIVALENT SHALL BE PLACED AT LEAST 6" DEEP OVER THE LENGTH AND WIDTH OF THE ENTRANCE.
5. SURFACE WATER – ALL SURFACE WATER FLOWING TO OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED THROUGH THE ENTRANCE, MAINTAINING POSITIVE DRAINAGE. PIPE INSTALLED THROUGH THE STABILIZED CONSTRUCTION ENTRANCE SHALL BE PROTECTED WITH A MOUNTABLE BERM WITH 5:1 SLOPES AND A MINIMUM OF 6" OF STONE OVER THE PIPE. WHEN THE SCE IS LOCATED AT A HIGH SPOT ALONG THE ROADWAY, DRAINAGE PIPE WILL NOT BE NECESSARY. PIPE SHOULD BE SIZED ACCORDING TO THE AMOUNT OF RUNOFF TO BE CONVEYED. A 12" MINIMUM WILL BE REQUIRED.
6. LOCATION – A STABILIZED CONSTRUCTION ENTRANCE SHALL BE LOCATED AT EVERY POINT WHERE CONSTRUCTION TRAFFIC ENTERS OR LEAVES A CONSTRUCTION SITE. VEHICLES LEAVING THE SITE MUST TRAVEL OVER THE ENTIRE LENGTH OF THE STABILIZED CONSTRUCTION ENTRANCE.
7. ALL EFFORTS SHALL BE MADE TO REDUCE MATERIAL IN THE ROADWAY.

STABALIZED CONSTRUCTION ENTRANCE
(NOT TO SCALE)



OS-1 6'Ø Manhole Detail
(NOT TO SCALE)



TRASH ENCLOSURE DETAIL
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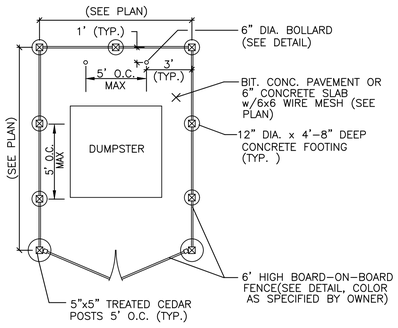

OS-1 6'Ø Manhole Detail
(NOT TO SCALE)

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
MARK A. ELBAG, JR.
CIVIL
REGISTERED PROFESSIONAL ENGINEER

MARK A. ELBAG, JR., PE
PROFESSIONAL ENGINEER REG #48449

STORMWATER SITE PLAN

PREPARED FOR:
122A REALTY LLC
274 OAK STREET
SHREWSBURY, MA 01545

PROPERTY ADRESS:
2400 MAIN STREET
HOLDEN, MA 01520
ASSESSOR MAP 82 PARCEL 27

PLAN TITLE: CONSTRUCTION DETAILS

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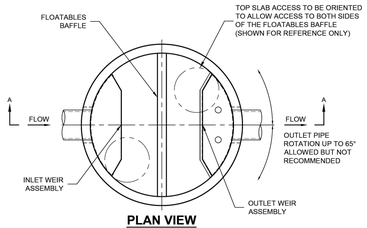
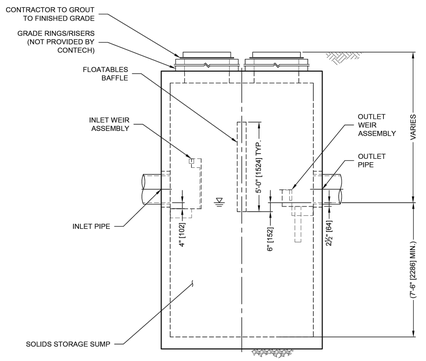
Jan 18, 2024 | Rev: | Sheet 10



PLAN VIEW
TOP SLAB NOT SHOWN



SECTION A-A

SciCloneX™
FOR PATENT INFORMATION, GO TO www.ContechES.com/SP

SCICLONEX DESIGN NOTES

THE STANDARD SCX-08 CONFIGURATION IS SHOWN.

SITE SPECIFIC DATA REQUIREMENTS

STRUCTURE ID			
WATER QUALITY FLOW RATE (cfs [L/s])			
PEAK FLOW RATE (cfs [L/s])			
RETURN PERIOD OF PEAK FLOW (yrs)			
RIM ELEVATION			
PIPE DATA:	INVERT	MATERIAL	DIAMETER
INLET PIPE 1			
INLET PIPE 2			
OUTLET PIPE			
NOTES / SPECIAL REQUIREMENTS:			

FRAME AND COVER
(MAY VARY)
NOT TO SCALE

GENERAL NOTES
1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. FOR SITE SPECIFIC DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHT, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.ContechES.com
3. SCICLONEX WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING. CONTRACTOR TO CONFIRM STRUCTURE MEETS REQUIREMENTS OF PROJECT.
4. SCICLONEX STRUCTURE SHALL MEET AASHTO HS20 LOAD RATING, ASSUMING EARTH COVER OF 0' - 2' [610], AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M306 AND BE CAST WITH THE CONTECH LOGO.
5. SCICLONEX STRUCTURE SHALL BE PRECAST CONCRETE CONFORMING TO ASTM C478 AND AASHTO LOAD FACTOR DESIGN METHOD.
6. ALTERNATE UNITS ARE SHOWN IN MILLIMETERS [mm].

INSTALLATION NOTES
A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE SCICLONEX MANHOLE STRUCTURE.
C. CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS AND ASSEMBLE STRUCTURE.
D. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT INLET AND OUTLET PIPE(S). MATCH PIPE INVERTS WITH ELEVATIONS SHOWN. ALL PIPE CENTERLINES TO MATCH PIPE OPENING CENTERLINES.
E. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO ASSURE UNIT IS WATER TIGHT, HOLDING WATER TO FLOWLINE INVERT MINIMUM. IT IS SUGGESTED THAT ALL JOINTS BELOW PIPE INVERTS ARE GROUTED.

CONTECH ENGINEERED SOLUTIONS LLC
www.ContechES.com
8301 State Highway 29 North, Alexandria, MN 56308
800-328-2047 320-852-7500 320-852-7067 FAX

SCX-08
SCICLONEX
STANDARD DETAIL

I:\COMMON\CAD\TREATMENT\24 SCICLONE\140 STANDARD DRAWINGS\IN PROCESS\SCX-08-STL.DWG 2/15/2023 3:21 PM

MACCAFERRI

TECHNICAL DATA SHEET
Rev: 03, Issue Date 05.08.2015

GABION
GALVANIZED
American Units

Product Description
Gabions are baskets manufactured from 8x10 double twisted hexagonal woven steel wire mesh, as per ASTM A975 (Figs. 1, 2). Gabions are filled with stones at the project site to form flexible, permeable, monolithic structures such as retaining walls, channel linings, and weirs for erosion control projects. The steel wire used in the manufacture of the gabion is heavily zinc coated soft temper steel. The standard specifications of mesh-wire are shown in Table 2.

The gabion is divided into cells by diaphragms positioned at approximately 3 ft (0.9 m) centers (Fig.1). To reinforce the structure, all mesh panel edges are selvedged with a wire having a greater diameter (Table 3). Dimensions and sizes of galvanized gabions are shown in Table 1.

Gabions shall be manufactured and shipped with all components mechanically connected at the production facility.

Wire
All tests on wire must be performed prior to manufacturing the mesh. All wire should comply with ASTM A975, style 1 coating. Wire used for the manufacture of Gabions and the lacing wire, shall have a maximum tensile strength of 75,000 psi (515 MPa) as per ASTM A641/A641M-03, soft temper steel.

Woven Wire Mesh Type 8x10
The mesh and wire characteristics shall be in accordance with ASTM A975 Table 1, Mesh type 8x10. The nominal mesh opening D = 3.25 in. (83 mm) as per Fig. 2.
The minimum mesh properties for strength and flexibility should be in accordance with the following:
- *Mesh Tensile Strength* shall be 3500 lb/ft (51.1 kN/m) minimum when tested in accordance with ASTM A975 section 13.1.1.
- *Punch Test* resistance shall be a minimum of 6000 lb (26.7 kN) when tested in compliance with ASTM A975 section 13.1.4.
- *Connection to Selvedges* should be 1400 lb/ft (20.4 kN/m) when tested in accordance with ASTM A975.

Lacing, Assembly and Installation
Gabion units are assembled and connected to one another using lacing wire specified in Table 3 and described in Fig. 4. MacTie preformed stiffeners or lacing wire can be used as internal connecting wires when a structure requires more than one layer of gabions to be stacked on top of each other. Internal connecting wires with lacing wire shall connect the exposed face of a cell to the opposite side of the cell. Internal connecting preformed stiffeners shall connect the exposed face of a cell to the adjacent side of the cell. Preformed stiffeners are installed at 45° to the faceside of the unit, extending an equal distance along each side to be braced (approximately 1 ft. (300 mm)). An exposed face is any side of a gabion cell that will be exposed or unsupported after the structure is completed.
Galvanized steel ring fasteners can be used instead of, or to complement, the lacing wire (Fig. 5).

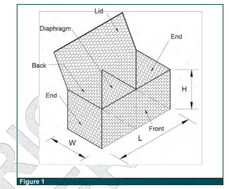


Figure 1

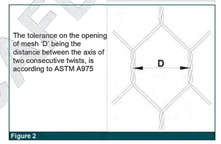


Figure 2


Figure 3—Example of gabion wall

MACCAFERRI

Maccaferri reserves the right to amend product specifications without notice and specifiers are requested to check as to the validity of the specifications they are using.

Table 1—Sizes for Gabions

L=Length ft (m)	W=Width ft (m)	H=Height ft (m)	# of cells
6 (1.8)	3 (0.9)	3 (0.9)	2
9 (2.7)	3 (0.9)	3 (0.9)	3
12 (3.6)	3 (0.9)	3 (0.9)	4
6 (1.8)	3 (0.9)	1.5 (0.45)	2
9 (2.7)	3 (0.9)	1.5 (0.45)	3
12 (3.6)	3 (0.9)	1.5 (0.45)	4
6 (1.8)	3 (0.9)	1 (0.3)	2
9 (2.7)	3 (0.9)	1 (0.3)	3
12 (3.6)	3 (0.9)	1 (0.3)	4
4.5 (1.4)	3 (0.9)	3 (0.9)	1
12 (3.6)**	6 (1.8)	1 (0.3)	4

All sizes and dimensions are nominal. Tolerances of ± 5% of the width, height, and length of the gabions shall be permitted.

Table 2—Standard mesh-wire

Type		Dia in. (mm)	Tolerance	Wire Dia in. (mm)
8x10	ZN	3.25 (83)	±10%	0.12 (3.05)

Table 3—Standard wire diameters

	Lacing Wire	Mesh Wire	Selvedge Wire / Preformed Stiffeners
Mesh Diameter ø in. (mm)	0.087 (2.20)	0.120 (3.05)	0.153 (3.90)
Wire Tolerance (±) ø in. (mm)	0.004 (0.10)	0.004 (0.10)	0.004 (0.10)
Minimum Coating oz/ft² (g/m²)	0.70 (214)	0.85 (259)	0.90 (275)
12 (3.6)**	6 (1.8)	1 (0.3)	4

Galvanized steel rings for galvanized gabions shall be in accordance with ASTM A975 section 6.3.

Spacing of the rings shall be in accordance with ASTM A975 Table 2, Panel to Panel connection, Pull-Apart Resistance. In any case, ring fasteners spacing shall not exceed 6 in. (150 mm) (Fig. 4).

The rings can be installed using pneumatic or manual tools (Fig. 6). For full details, please see the Gabion Product Installation Guide.

The average maximum resistance of the fasteners from the field shall not be lower than 90% of the resistance provided in the certification.

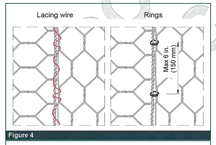


Figure 4

Figure 5

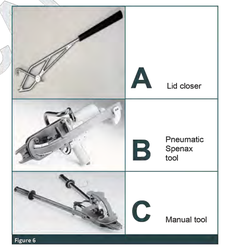


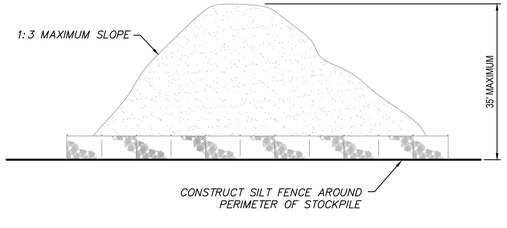
Figure 6

Quantity Request
When requesting a quotation, please specify:
- Number of units,
- Size of units (length x width x height, see Table 1),
- Type of mesh,
- Type of coating.

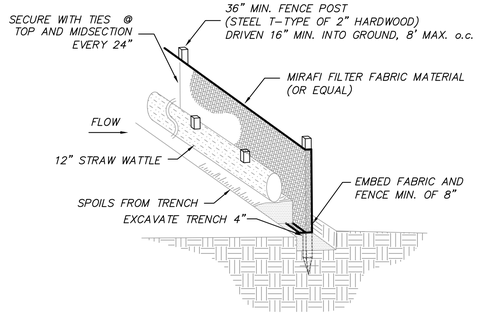
EXAMPLE: No. 100 gabions, 6x3x3, Mesh type 8x10, Wire diam. 0.120 in, Galvanized.

Maccaferri, Inc.
10303 Governor Lane Blvd., Williamsport, MD 21795
Tel. (800) 638-7744 - Fax (301) 223-4590
E-mail: info@maccaferri-usa.com - Web site: www.maccaferri-usa.com

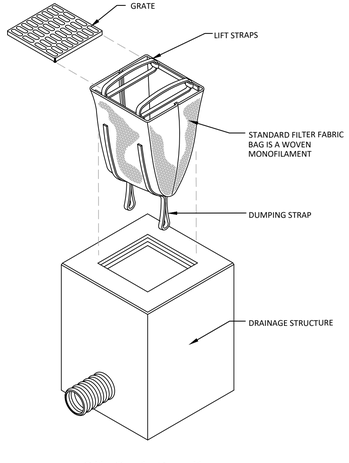
Distributed by:
Colonial Construction Materials Tel. 800-436-6287
www.colonial-materials.com



Temporary Stockpile Detail
(NOT TO SCALE)



Silt Fence Wattle Detail
(NOT TO SCALE)



Silt Sack Detail
(NOT TO SCALE)

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
MARK A. ELBAG, JR.
CIVIL
PROFESSIONAL ENGINEER

MARK A. ELBAG, JR., PE
PROFESSIONAL ENGINEER REG #48449

STORMWATER SITE PLAN

PREPARED FOR:
122A REALTY LLC
274 OAK STREET
SHREWSBURY, MA 01545

PROPERTY ADRESS:
2400 MAIN STREET
HOLDEN, MA 01520
ASSESSOR MAP 82 PARCEL 27

PLAN TITLE: *CONSTRUCTION DETAILS*

M.A. ELBAG ENGINEERING
P.O. BOX 636
RUTLAND, MA 01543
Phone:(508) 726-1199
maelbag@gmail.com

Jan 18, 2024 | *Rev:* | *Sheet 11*

N/F
MIKEL A. & ANTOINETTE I.
MATISOO
BK. 21323 PG. 319

400' SECONDARY ZONE

STAKE (FOUND)

RE-ROD (FOUND)

IRON PIPE (FOUND)

200' PRIMARY ZONE

WETLAND LINE

TREELINE

STAKES SET ON TOWN LINE

STAKES SET ON PROPERTY LINE

RE-ROD (FOUND)

DRILL HOLE (FOUND)

EDGE OF TRIBUTARY

SOIL 312B
CLASS C

SOIL 102C
CLASS B

SOIL 71A
CLASS D

SOIL 312B
CLASS C

4S

3S

Tc

APPROXIMATE TOWN LINE

RUTLAND

HOLDEN

WETLANDS

M.H.B (FOUND)

CONSTRUCTION ENTRANCE

EXPOSED LEDGE

MAIN STREET
1950 STATE HIGHWAY LAYOUT

TBM-1
NAIL IN 40" OAK
EL=1002.05

N/F
EDWARD R.
LEAHY
BK. 46647 PG. 21
PL. BK. 112 PL. 112

N/F
ROBERT A. &
KATHLEEN M.
PETERSON
BK. 12683 PG. 4
PARCEL A
PL. BK. 616 PL. 86

MARK A. ELBAG, JR., PE
PROFESSIONAL ENGINEER REG #48449

GRAPHIC SCALE
50 0 50 100
(IN FEET)
1 inch = 50 ft.

TYPICAL LEGEND

PROPERTY LINE	
SETBACK	
EASEMENT	
STONEWALL	
TREE LINE	
WELL	W
EXISTING CONTOUR	100
PROPOSED CONTOUR	100
SPOT ELEVATION	99x50
WATTLE	
WETLAND BUFFER	
SILT FENCE	
HAYBALE	
BENCHMARK	

STORMWATER SITE PLAN

PREPARED FOR:
122A REALTY LLC
274 OAK STREET
SHREWSBURY, MA 01545

PROPERTY ADRESS:
2400 MAIN STREET
HOLDEN, MA 01520
ASSESSOR MAP 82 PARCEL 27

PLAN TITLE: PREDEVELOPMENT DRAIN AREA

M.A. ELBAG ENGINEERING
P.O. BOX 636
RUTLAND, MA 01543
Phone:(508) 726-1199
maelbag@gmail.com

Jan 18, 2024 | Rev: | Sheet 1

N/F
MIKEL A. & ANTOINETTE I.
MATISOO
BK. 21323 PG. 319

N/F
EDWARD R.
LEAHY
BK. 46647 PG. 21
PL. BK. 112 PL. 112

N/F
ROBERT A. &
KATHLEEN M.
PETERSON
BK. 12683 PG. 4
PARCEL A
PL. BK. 616 PL. 86

8S
9S
10S
2S

SOIL 312B
CLASS C

SOIL 102C
CLASS B

SOIL 71A
CLASS D

SOIL 312B
CLASS C

400' SECONDARY ZONE
200' PRIMARY ZONE
STAKES SET ON TOWN LINE
STAKES SET ON PROPERTY LINE
APPROXIMATE TOWN LINE
RUTLAND
HOLDEN
EDGE OF TRIBUTARY
TREELINE
WETLAND LINE
WETLANDS
STAKE (FOUND)
RE-ROD (FOUND)
IRON PIPE (FOUND)
DRILL HOLE (FOUND)
M.H.B (FOUND)
M.H.B's (FOUND)
CONSTRUCTION ENTRANCE
MAIN STREET
1950 STATE HIGHWAY LAYOUT

TBM-1
NAIL IN 40" OAK
EL=1002.05

GRAPHIC SCALE
50 0 50 100
(IN FEET)
1 inch = 50 ft.

MARK A. ELBAG, JR., PE
PROFESSIONAL ENGINEER REG #48449

TYPICAL LEGEND

PROPERTY LINE	
SETBACK	
EASEMENT	
STONEWALL	
TREE LINE	
WELL	W
EXISTING CONTOUR	100
PROPOSED CONTOUR	100
SPOT ELEVATION	99x50
WATTLE	
WETLAND BUFFER	
SILT FENCE	
HAYBALE	
BENCHMARK	

STORMWATER SITE PLAN

PREPARED FOR:
122A REALTY LLC
274 OAK STREET
SHREWSBURY, MA 01545

PROPERTY ADRESS:
2400 MAIN STREET
HOLDEN, MA 01520
ASSESSOR MAP 82 PARCEL 27

PLAN TITLE: *POSTDEVELOPMENT DRAIN AREA*

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Jan 18, 2024 | Rev: | Sheet 1