PLAN INDEX	
PLAN TITLE	SHEET DESIGNATION
SITE INDEX PLAN	C1 OF 10
EXISTING CONDITION PLAN	C2 OF 10
SITE GRADING PLAN	C3 OF 10
SITE UTILITY PLAN	C4 OF 10
SITE LAYOUT PLAN	C5 OF 10
PLAN & PROFILE	C6 OF 10
PLAN & PROFILE	C7 OF 10
SURVEY PLAN	C8 OF 10
SITE DETAILS PLAN	C9 OF 10
SITE DETAILS PLAN	C10 OF 10
ILLUSTRATIVE SITE PLAN	L1

ZONING TABLE		
ZONE	PUD-R	
DIMENSIONAL CONTROLS	REQUIRED/ALLOWED	PROPOSED
MIN. SETBACK PARCEL BOUNDARY	20 ft. *	> 20 ft.
MIN SETBACK 30 ft. & 35 ft. HEIGHT	40 ft. *	> 40 ft.
MIN. SETBACK > 35 ft. HEIGHT	50 ft. *	> 50 ft.
MIN. DISTANCE BETWEEN BLDGS.	15 ft.	> 15 ft.
MIN. LOT AREA	10 Ac.	Phase I=27.8 Ac. Phase II=11.6 Ac. Total=39.4 Ac.
MAX. BUILDING HEIGHT	70 ft. **	47± ft.
MAX. INTENSITY OF USE (PHASE II)	127 units ***	127 units
MIN. AFFORDABLE UNITS	19 units	19 units
MIN. OPEN SPACE	25 %	> 50%
MIN. RECREATION AREA	15 %	17 %
PARKING (see phase II parking table)	254	284

* MINIMUM RESIDENTIAL SETBACKS:
ALL DWELLINGS WITHIN A PUD-R SHALL BE AT LEAST 20 FEET FROM THE PUD-R PARCEL BOUNDARY EXCEPT THAT A DWELLING THAT IS BETWEEN 30 AND 35 FEET IN HEIGHT MUST BE AT LEAST 40 FEET FROM THE PUD-R PARCEL BOUNDARY (EXCLUDING A PARCEL BOUNDARY THAT IS ALSO A TOWN BOUNDARY) AND A DWELLING THAT IS OVER 35 FEET IN HEIGHT MUST BE AT LEAST 50 FEET FROM THE PUD-R PARCEL BOUNDARY (EXCLUDING A PARCEL BOUNDARY THAT IS ALSO A TOWN BOUNDARY).

** MAXIMUM BUILDING HEIGHT:
THE MAXIMUM BUILDING HEIGHT AS TO A DWELLING SHALL BE 30 FEET EXCEPT THAT A DWELLING THAT IS MORE THAN 50 FEET FROM THE PUD-R PARCEL BOUNDARY MAY BE 35 FEET IN HEIGHT AND A DWELLING THAT IS AT LEAST 150 FEET FROM DWELLINGS THAT ARE OUTSIDE OF A PUD AND IN EXISTENCE AT THE TIME OF PRELIMINARY PUD PLAN SUBMISSION, MAY HAVE A MAXIMUM HEIGHT OF 40 FEET, EXCEPTING THAT A DWELLING THAT IS WITHIN 300 FEET OF THE TOWN BOUNDARY MAY HAVE A MAXIMUM HEIGHT OF 70 FEET.

*** MINIMUM INTENSITY OF RESIDENTIAL USE:
6 UNITS PER ACRE GREATER THAN 300 FEET FROM MUNICIPAL BOUNDARY.
11 UNITS PER ACRE WITHIN 300 FEET FROM MUNICIPAL BOUNDARY.

PHASE II PARKING TABLE					
BUILDING TYPE	NO. OF UNITS	REQUIRED PARKING	PROVIDED SURFACE PARKING	PROVIDED GARAGE PARKING	SUBTOTAL PROVIDED PARKING
FLATS	111	(111)*(2)=222	70	166	236
TOWNHOUSES	16	(16)*(2)=32	24	24	48
TOTAL	127	254	94	190	284

Additional Info:

Prepared For:

Owner / Applicant
Johnson Woods Realty Corp.
c/o Glover Property Management, Inc.
8 Doaks Lane
Marblehead, MA 01945

Prepared By:

Hayes Engineering, Inc.
45 Bonazzoli Drive, Suite 1
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Ph: 781.246.2800
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www.hayesengineering.com

Seal:

Design By: xxx
Drawn By: MEM
Checked By: WRB
Project File: REA-0316
Comp. No: REA44
☒ Issued For Permit
☐ Issued For Review
☐ Issued For Bid
☐ Issued For Construction
☐ Not For Construction

No.	Revision	Date
1		
2		
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10		

Scale: 1"=50'
0' 25' 50' 100'
Date: October 6, 2011

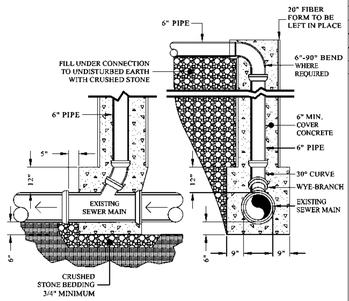
Drawing Title:

SITE INDEX PLAN
JOHNSON WOODS
PLANNED UNIT DEVELOPMENT (PHASE II)
READING, MASS.

Drawing No.:

C1

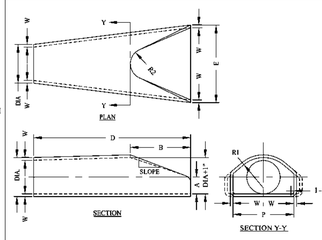
SHEET 1 OF 10



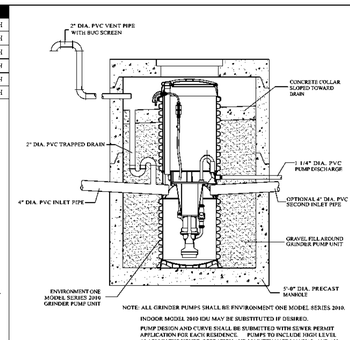
SEWER CHIMNEY
NOT TO SCALE

NOTE:
A DROP ENTRY PIPE SHALL BE PROVIDED FOR ANY SEWER ENTERING A MANHOLE AT AN ELEVATION OF 24 INCHES OR MORE ABOVE THE MANHOLE INVERT.

12"	2"	4"	2'-0"	6'-0"	2'-0"	19-15/16"	13"	10-1/8"	9"	IV:3H
15"	2-1/4"	6"	2'-3"	6'-0"	2'-6"	24-5/16"	16"	12-1/2"	11"	IV:3H
18"	2-1/2"	9"	2'-3"	6'-0"	3'-0"	29"	19"	15-1/2"	12"	IV:3H
24"	3"	9-1/2"	3'-7 1/2"	6'-0"	4'-0"	33-3/16"	25"	16-13/16"	14"	IV:3H
36"	4"	15"	5'-3"	8'-0"	6'-0"	47-13/16"	37"	24-5/16"	20"	IV:3H
48"	5"	24"	6'-0"	8'-0"	7'-0"	56-1/2"	49"	28-1/2"	22"	IV:3H



REINFORCED CONCRETE FLARED END SECTION
NOT TO SCALE

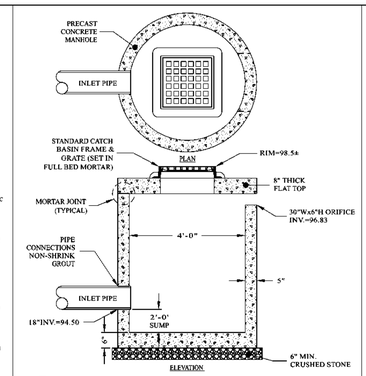


NOTE: ALL GRINDER PUMPS SHALL BE ENVIRONMENT ONE MODEL SERIES 2010.

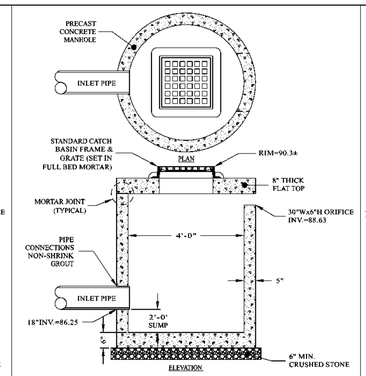
INDOOR MODEL 2010 IDU MAY BE SUBSTITUTED IF DESIRED.

PUMP DESIGN AND CURVE SHALL BE SUBMITTED WITH SEWER PERMIT APPLICATION FOR EACH RESIDENCE. PUMPS TO INCLUDE HIGH LEVEL ALARM IN THE HOUSE, OPERATION AND MAINTENANCE MANUAL, AND AN EXTERIOR ELECTRIC OUTLET FOR AN EMERGENCY GENERATOR TO OPERATE THE PUMPS DURING POWER OUTAGES.

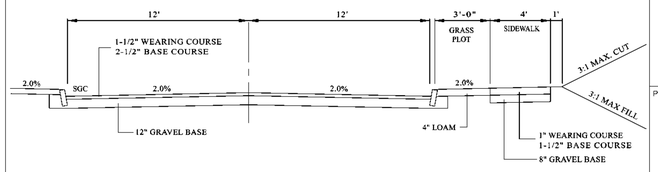
PUMP STATION (OUTDOOR UNIT) TYPICAL ELEVATION VIEW
NOT TO SCALE



RES05 OUTLET CONTROL STRUCTURE
NOT TO SCALE



RES06 OUTLET CONTROL STRUCTURE
NOT TO SCALE



ROADWAY CROSS SECTION
NOT TO SCALE

Additional Info:

Prepared For:

Owner / Applicant

Johnson Woods Realty Corp.
c/o Cedar Property Management, Inc.
8 Doaks Lane
Marblehead, MA 01945

Prepared By:

Hayes Engineering, Inc.
803 Salem Street
Wilmington, MA 01887
Ph: 781.246.5500
Fax: 781.246.7596
www.hayesengi.com

Seal:

Design By: xxx
Drawn By: MEM
Checked By: WRB
Project File: REA-0316
Comp. No: REA44
☒ Issued For Permit
☐ Issued For Review
☐ Issued For Bid
☐ Issued For Construction
☐ Not For Construction

No.	Revision	Date
1		
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Scale: None

Date: October 6, 2011

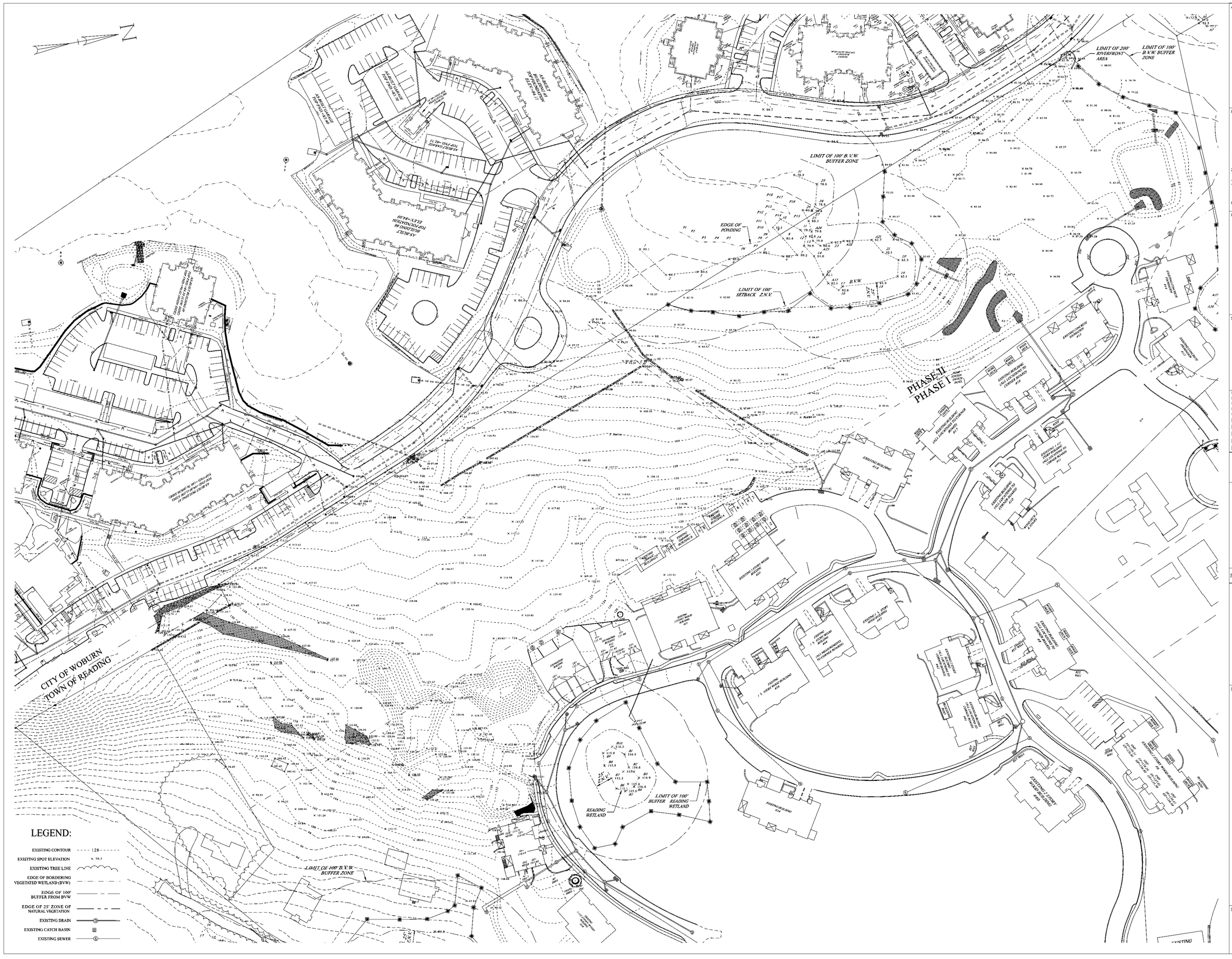
Drawing Title:

SITE DETAILS PLAN
JOHNSON WOODS
PLANNED UNIT DEVELOPMENT (PHASE II)
READING, MASS.

Drawing No.:

C10

SHEET 10 OF 10



Additional Info:

Prepared For:

Owner / Applicant

Johnson Woods Realty Corp.
c/o Glover Property Management, Inc.
8 Doaks Lane
Marblehead, MA 01945

Prepared By:

Hayes Engineering, Inc.
603 Salem Street
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Seal:

Design By: xxx
Drawn By: MEM
Checked By: WRB
Project File: REA-0316
Comp. No: REA44

- [x] Issued For Permit
- [ ] Issued For Review
- [ ] Issued For Bid
- [ ] Issued For Construction
- [ ] Not For Construction

No.	Revision	Date
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Scale: 1"=40'

0' 20' 40' 80'

Date: October 6, 2011

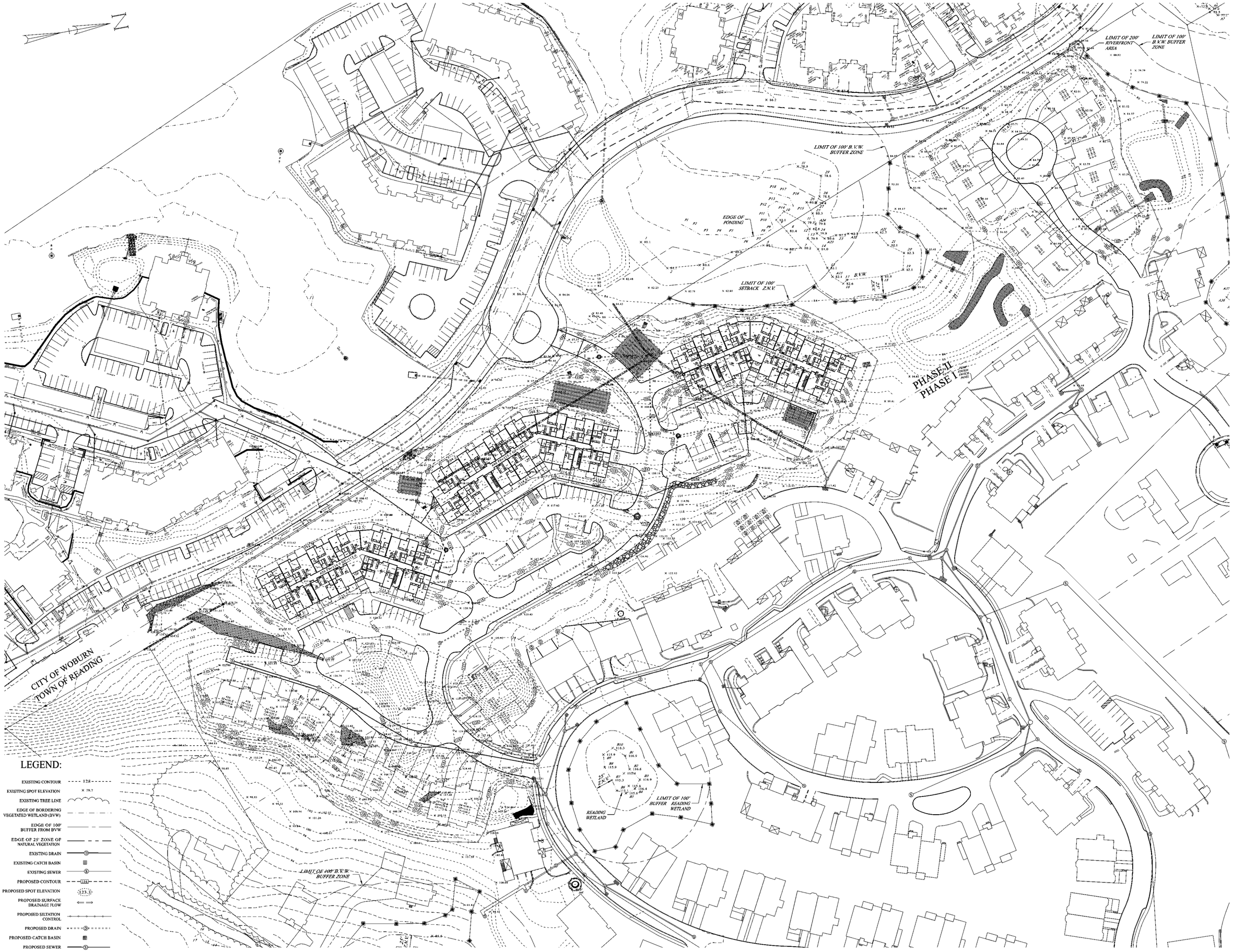
Drawing Title:

EXISTING CONDITION PLAN
JOHNSON WOODS
PLANNED UNIT DEVELOPMENT (PHASE II)
READING, MASS.

Drawing No.:

C2

SHEET 2 OF 10



Additional Info:

Prepared For:

Owner / Applicant

Johnson Woods Realty Corp.
c/o Glover Property Management, Inc.
8 Doaks Lane
Marblehead, MA 01945

Prepared By:

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Seal:

Design By: xxx
Drawn By: MEM
Checked By: WRB
Project File: REA-0316
Comp. No: REA44

- [x] Issued For Permit
- [ ] Issued For Review
- [ ] Issued For Bid
- [ ] Issued For Construction
- [ ] Not For Construction

No.	Revision	Date
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Scale: 1"=40'

0' 20' 40' 80'

Date: October 6, 2011

Drawing Title:

SITE GRADING PLAN
JOHNSON WOODS
PLANNED UNIT DEVELOPMENT (PHASE II)
READING, MASS.

Drawing No.:

C3

SHEET 3 OF 10

Additional Info:

Prepared For:

Owner / Applicant

Johnson Woods Realty Corp.
c/o Glover Property Management, Inc.
8 Doaks Lane
Marblehead, MA 01945

Prepared By:

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Seal:

Design By: xxx
Drawn By: MEM
Checked By: WRB
Project File: REA-0316
Comp. No: REA44

- [x] Issued For Permit
- [ ] Issued For Review
- [ ] Issued For Bid
- [ ] Issued For Construction
- [ ] Not For Construction

No.	Revision	Date
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Scale: 1"=40'

0' 20' 40' 80'

Date: October 6, 2011

Drawing Title:

SITE UTILITY PLAN
JOHNSON WOODS
PLANNED UNIT DEVELOPMENT (PHASE II)
READING, MASS.

Drawing No.:

C4

SHEET 4 OF 10

PLAN INDEX	
PLAN TITLE	SHEET DESIGNATION
SITE INDEX PLAN	C1 OF 10
EXISTING CONDITION PLAN	C2 OF 10
SITE GRADING PLAN	C3 OF 10
SITE UTILITY PLAN	C4 OF 10
SITE LAYOUT PLAN	C5 OF 10
PLAN & PROFILE	C6 OF 10
PLAN & PROFILE	C7 OF 10
SURVEY PLAN	C8 OF 10
SITE DETAILS PLAN	C9 OF 10
SITE DETAILS PLAN	C10 OF 10
ILLUSTRATIVE SITE PLAN	L1

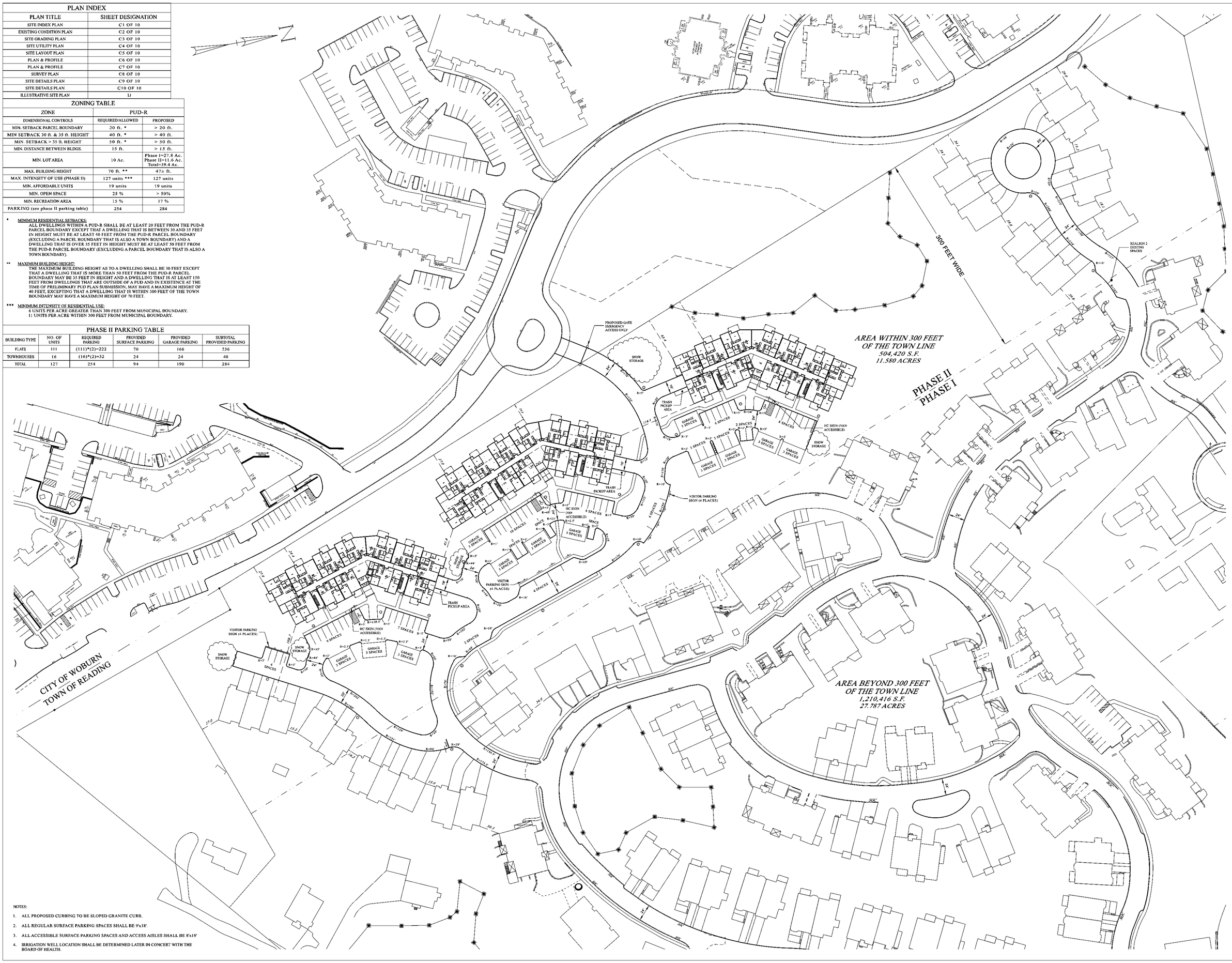
ZONING TABLE		
ZONE	PUD-R	
DIMENSIONAL CONTROLS	REQUIRED/ALLOWED	PROPOSED
MIN. SETBACK PARCEL BOUNDARY	20 ft. *	> 20 ft.
MIN SETBACK 30 ft. & 35 ft. HEIGHT	40 ft. *	> 40 ft.
MIN. SETBACK > 35 ft. HEIGHT	50 ft. *	> 50 ft.
MIN. DISTANCE BETWEEN BLDGS.	15 ft.	> 15 ft.
MIN. LOT AREA	10 Ac.	Phase I=27.8 Ac. Phase II=11.6 Ac. Total=39.4 Ac.
MAX. BUILDING HEIGHT	70 ft. **	47± ft.
MAX. INTENSITY OF USE (PHASE II)	127 units ***	127 units
MIN. AFFORDABLE UNITS	19 units	19 units
MIN. OPEN SPACE	25 %	> 50%
MIN. RECREATION AREA	15 %	17 %
PARKING (see phase II parking table)	254	284

* MINIMUM RESIDENTIAL SETBACKS:
ALL DWELLINGS WITHIN A PUD-R SHALL BE AT LEAST 20 FEET FROM THE PUD-R PARCEL BOUNDARY EXCEPT THAT A DWELLING THAT IS BETWEEN 30 AND 35 FEET IN HEIGHT MUST BE AT LEAST 40 FEET FROM THE PUD-R PARCEL BOUNDARY (EXCLUDING A PARCEL BOUNDARY THAT IS ALSO A TOWN BOUNDARY) AND A DWELLING THAT IS OVER 35 FEET IN HEIGHT MUST BE AT LEAST 50 FEET FROM THE PUD-R PARCEL BOUNDARY (EXCLUDING A PARCEL BOUNDARY THAT IS ALSO A TOWN BOUNDARY).

** MAXIMUM BUILDING HEIGHT:
THE MAXIMUM BUILDING HEIGHT AS TO A DWELLING SHALL BE 30 FEET EXCEPT THAT A DWELLING THAT IS MORE THAN 50 FEET FROM THE PUD-R PARCEL BOUNDARY MAY BE 35 FEET IN HEIGHT AND A DWELLING THAT IS AT LEAST 150 FEET FROM DWELLINGS THAT ARE OUTSIDE OF A PUD AND IN EXISTENCE AT THE TIME OF PRELIMINARY PUD PLAN SUBMISSION, MAY HAVE A MAXIMUM HEIGHT OF 40 FEET, EXCEPTING THAT A DWELLING THAT IS WITHIN 300 FEET OF THE TOWN BOUNDARY MAY HAVE A MAXIMUM HEIGHT OF 70 FEET.

*** MINIMUM INTENSITY OF RESIDENTIAL USE:
6 UNITS PER ACRE GREATER THAN 300 FEET FROM MUNICIPAL BOUNDARY.
11 UNITS PER ACRE WITHIN 300 FEET FROM MUNICIPAL BOUNDARY.

PHASE II PARKING TABLE					
BUILDING TYPE	NO. OF UNITS	REQUIRED PARKING	PROVIDED SURFACE PARKING	PROVIDED GARAGE PARKING	SUBTOTAL PROVIDED PARKING
FLATS	111	(111)*(2)=222	70	166	236
TOWNHOUSES	16	(16)*(2)=32	24	24	48
TOTAL	127	254	94	190	284



NOTES:

1. ALL PROPOSED CURBING TO BE SLOPED GRANITE CURB.
2. ALL REGULAR SURFACE PARKING SPACES SHALL BE 9'x18'.
3. ALL ACCESSIBLE SURFACE PARKING SPACES AND ACCESS AISLES SHALL BE 8'x18'
4. IRRIGATION WELL LOCATION SHALL BE DETERMINED LATER IN CONCERT WITH THE BOARD OF HEALTH.

Additional Info:

Prepared For:

Owner / Applicant
Johnson Woods Realty Corp.
c/o Greenleaf Property Management, Inc.
8 Doaks Lane
Marblehead, MA 01945

Prepared By:

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Seal:

Design By: xxx
Drawn By: MEM
Checked By: WRB
Project File: REA-0316
Comp. No: REA44
☒ Issued For Permit
☐ Issued For Review
☐ Issued For Bid
☐ Issued For Construction
☐ Not For Construction

No.	Revision	Date
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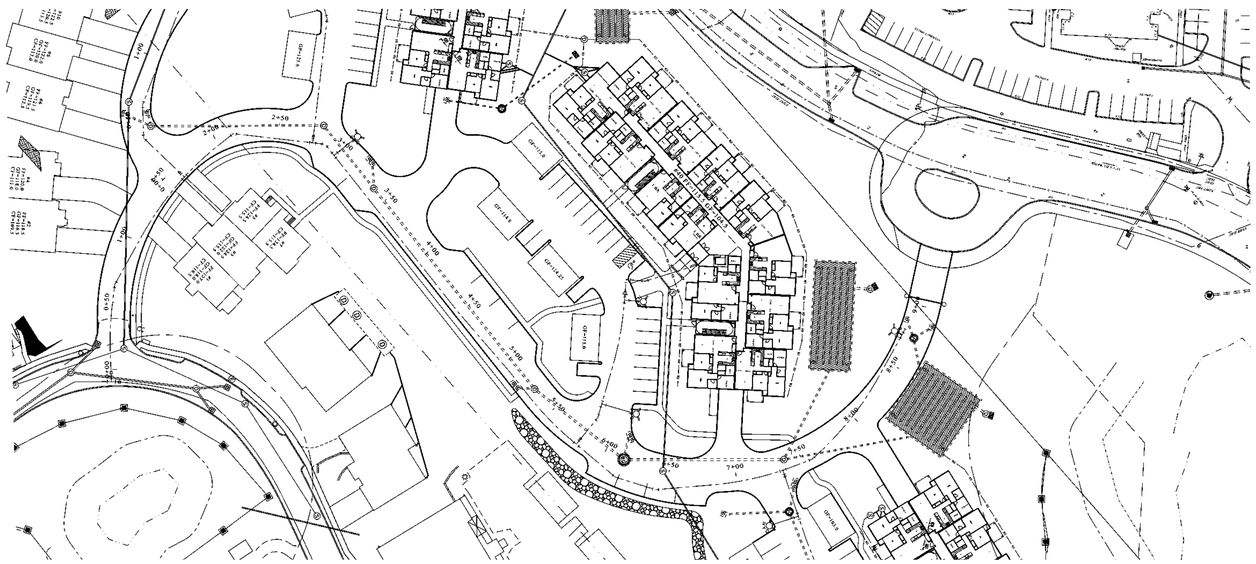
2	Town Comments	10/13/2011
1		

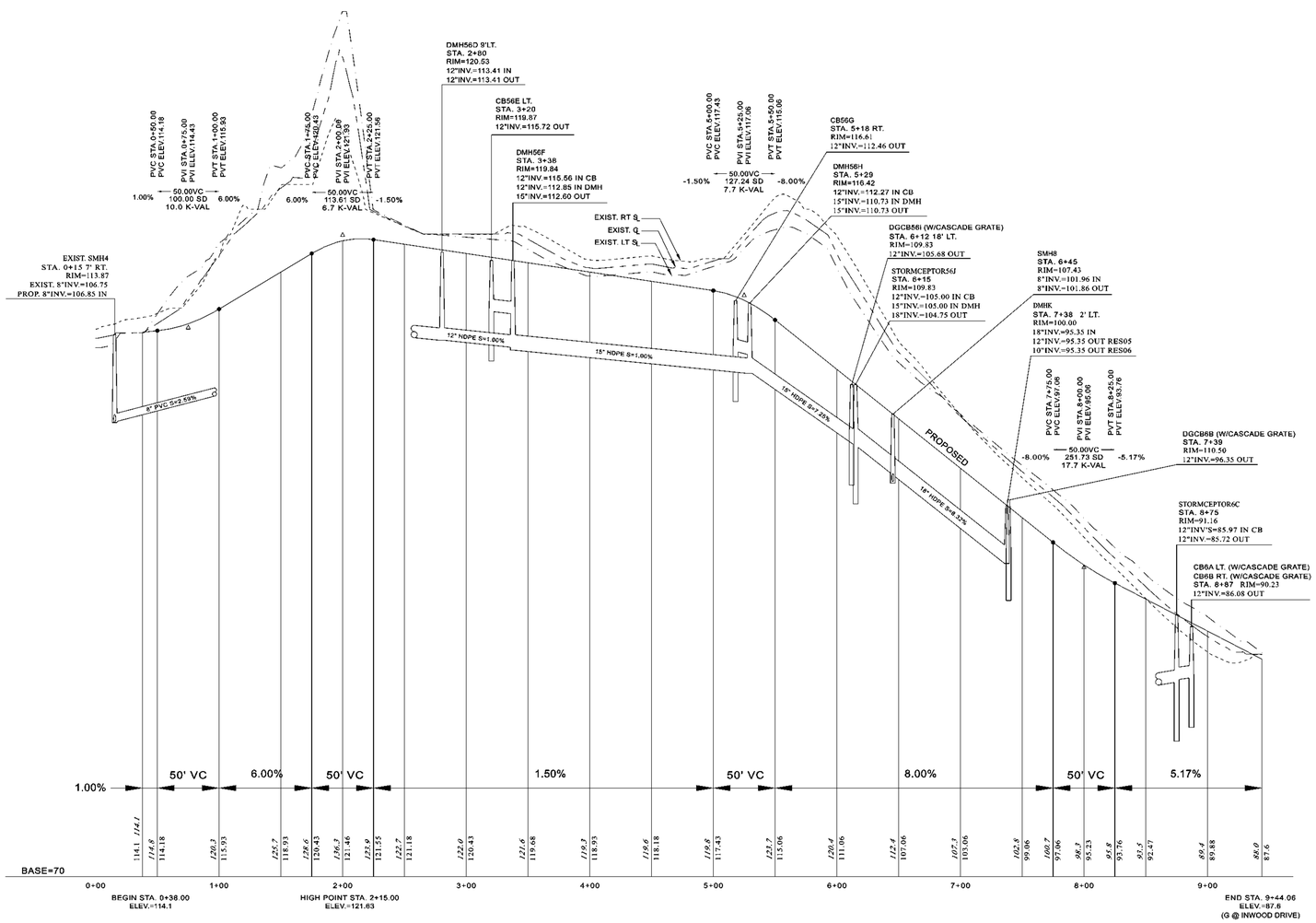
Scale: 1"=40'
0' 20' 40' 80'
Date: October 6, 2011

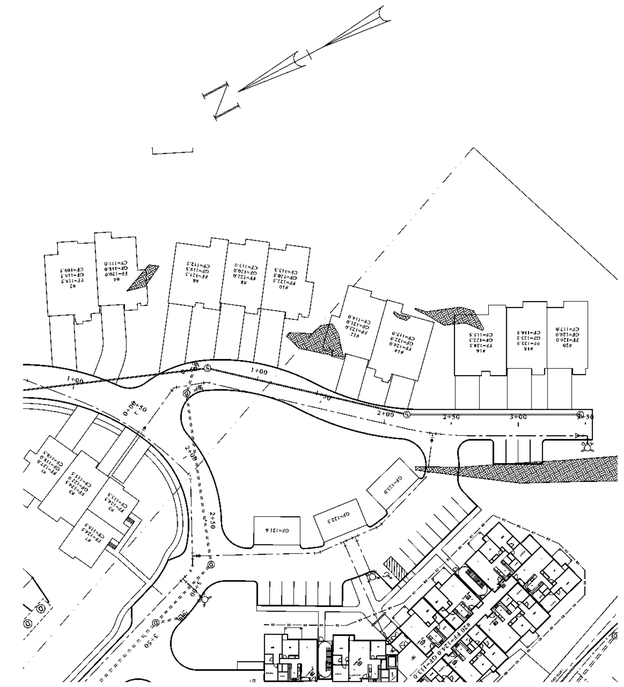
Drawing Title:
SITE LAYOUT PLAN
JOHNSON WOODS
PLANNED UNIT DEVELOPMENT (PHASE II)
READING, MASS.

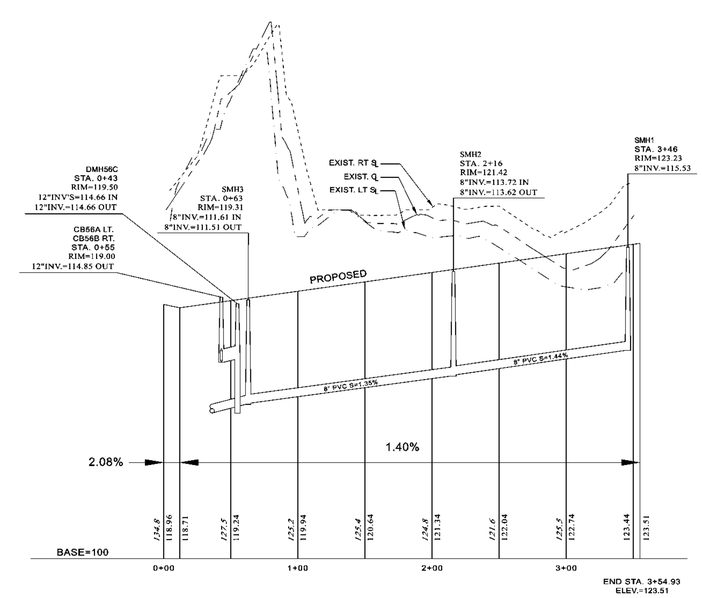
Drawing No.:
C5

SHEET 5 OF 10









Additional Info:

Prepared For:

Owner / Applicant

Johnson Woods Realty Corp.
c/o Greenwood Property Management, Inc.
8 Doaks Lane
Marblehead, MA 01945

Prepared By:

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www.hayesengineering.com

Seal:

Design By: xxx
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☐ Not For Construction

No.	Revision	Date
10		
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Scale: 1"= 40' Hor. & 4' Ver.
0' 20' 40' 80'

Date: October 6, 2011

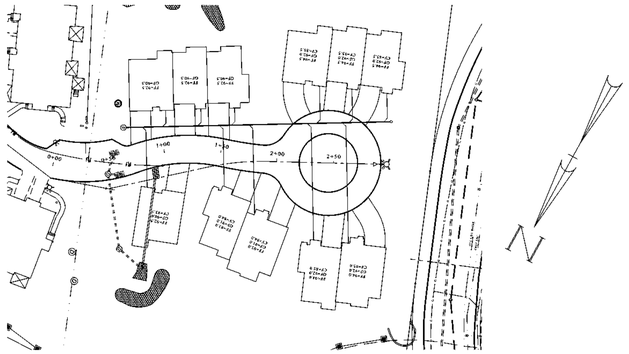
Drawing Title:

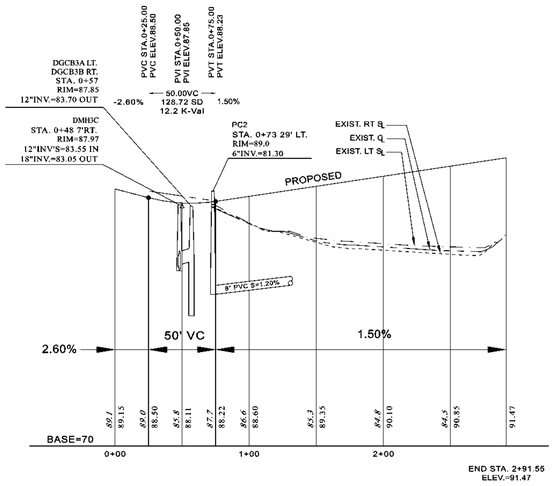
PLAN & PROFILE
JOHNSON WOODS
PLANNED UNIT DEVELOPMENT (PHASE II)
READING, MASS.

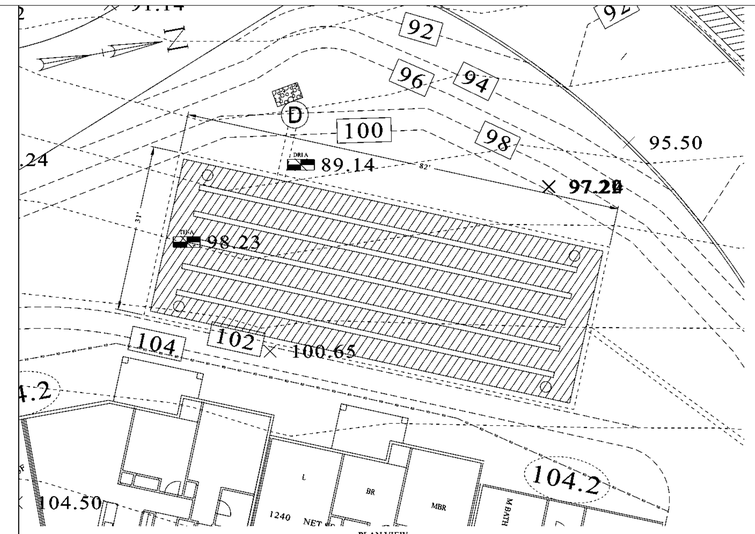
Drawing No.:

C6

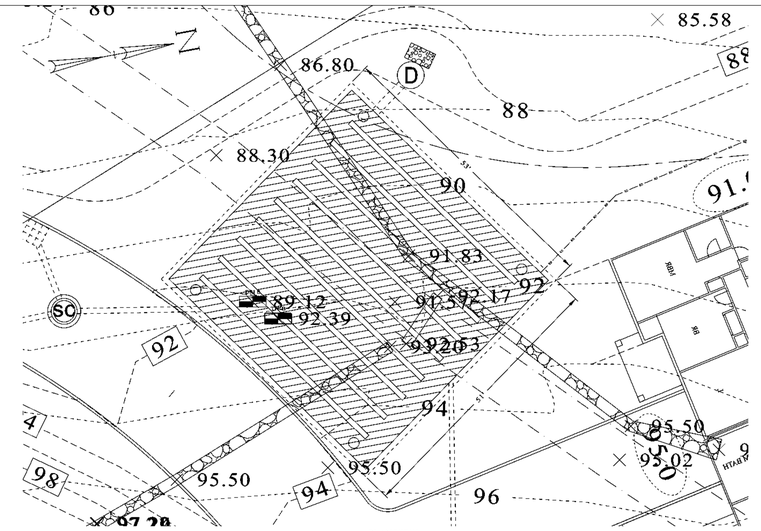
SHEET 6 OF 10



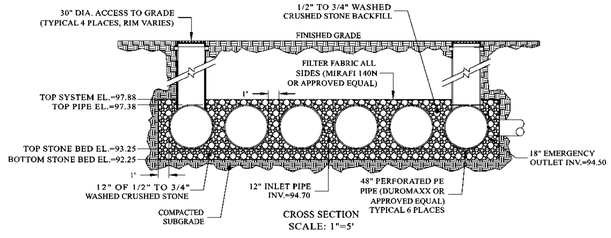




PLAN VIEW
SCALE:1"=10'

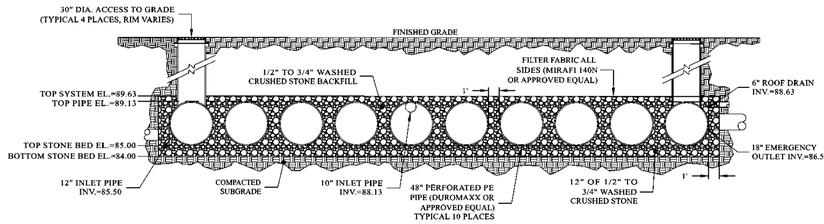


PLAN VIEW
SCALE:1"=10'



CROSS SECTION
SCALE: 1"=5'

RES05 SUBSURFACE INFILTRATION BMP
SCALE AS SHOWN

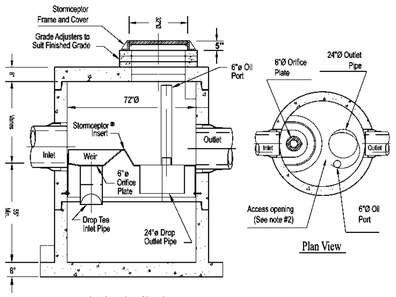


CROSS SECTION
SCALE: 1"=5'

RES06 SUBSURFACE INFILTRATION BMP
SCALE AS SHOWN

Rinker MATERIALS™ — Concrete Pipe Division

STC 900 Precast Concrete Stormceptor
(900 U.S. Gallon Capacity)



Section Thru Chamber

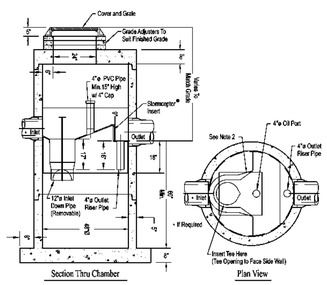
Notes:
1. The Use Of Flexible Connection is Recommended at The Inlet and Outlet Where Applicable.
2. The Cover Should be Positioned Over The Outlet Drop Pipe and The Oil Port.
3. The Stormceptor System is protected by one or more of the following U.S. Patents: #4985148, #5498331, #5725760, #5753115,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

Rinker 028

STORMCEPTOR STC 900
NOT TO SCALE

Rinker MATERIALS™ — Concrete Pipe Division

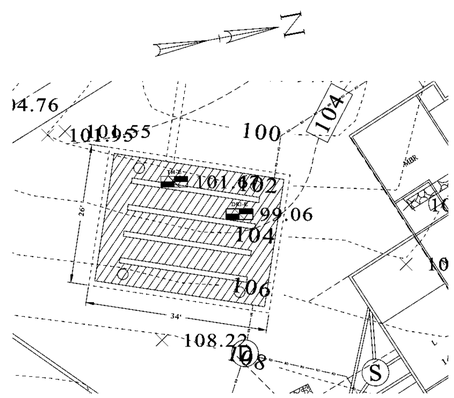
STC 450i Precast Concrete Stormceptor
(450 U.S. Gallon Capacity)



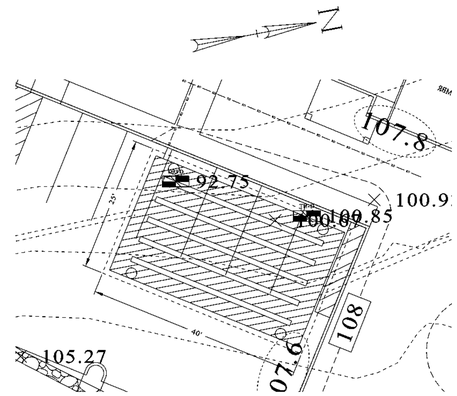
Notes:
1. The Use Of Flexible Connection is Recommended at The Inlet and Outlet Where Applicable.
2. The Cover Should be Positioned Over The Inlet Drop Pipe and The Oil Port.
3. The Stormceptor System is protected by one or more of the following U.S. Patents: #4985148, #5498331, #5725760, #5753115, #5849181,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

Rinker 027

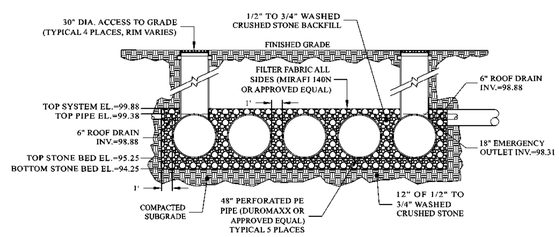
STORMCEPTOR STC 450i
NOT TO SCALE



PLAN VIEW
SCALE:1"=10'

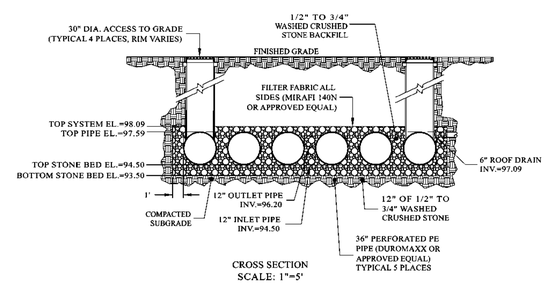


PLAN VIEW
SCALE:1"=10'



CROSS SECTION
SCALE: 1"=5'

RES07 SUBSURFACE INFILTRATION BMP
NOT TO SCALE



CROSS SECTION
SCALE: 1"=5'

RES08 SUBSURFACE INFILTRATION BMP
SCALE AS SHOWN

Additional Info:

Prepared For:

Owner / Applicant
Johnson Woods Realty Corp.
c/o Gorman Property Management, Inc.
8 Deaks Lane
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Prepared By:

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Fax: 781.246.7506
www.hayesengi.com

Seal:

Design By: xxx
Drawn By: MEM
Checked By: WRB
Project File: REA-0316
Comp. No: REA44
☒ Issued For Permit
☐ Issued For Review
☐ Issued For Bid
☐ Issued For Construction
☐ Not For Construction

No.	Revision	Date
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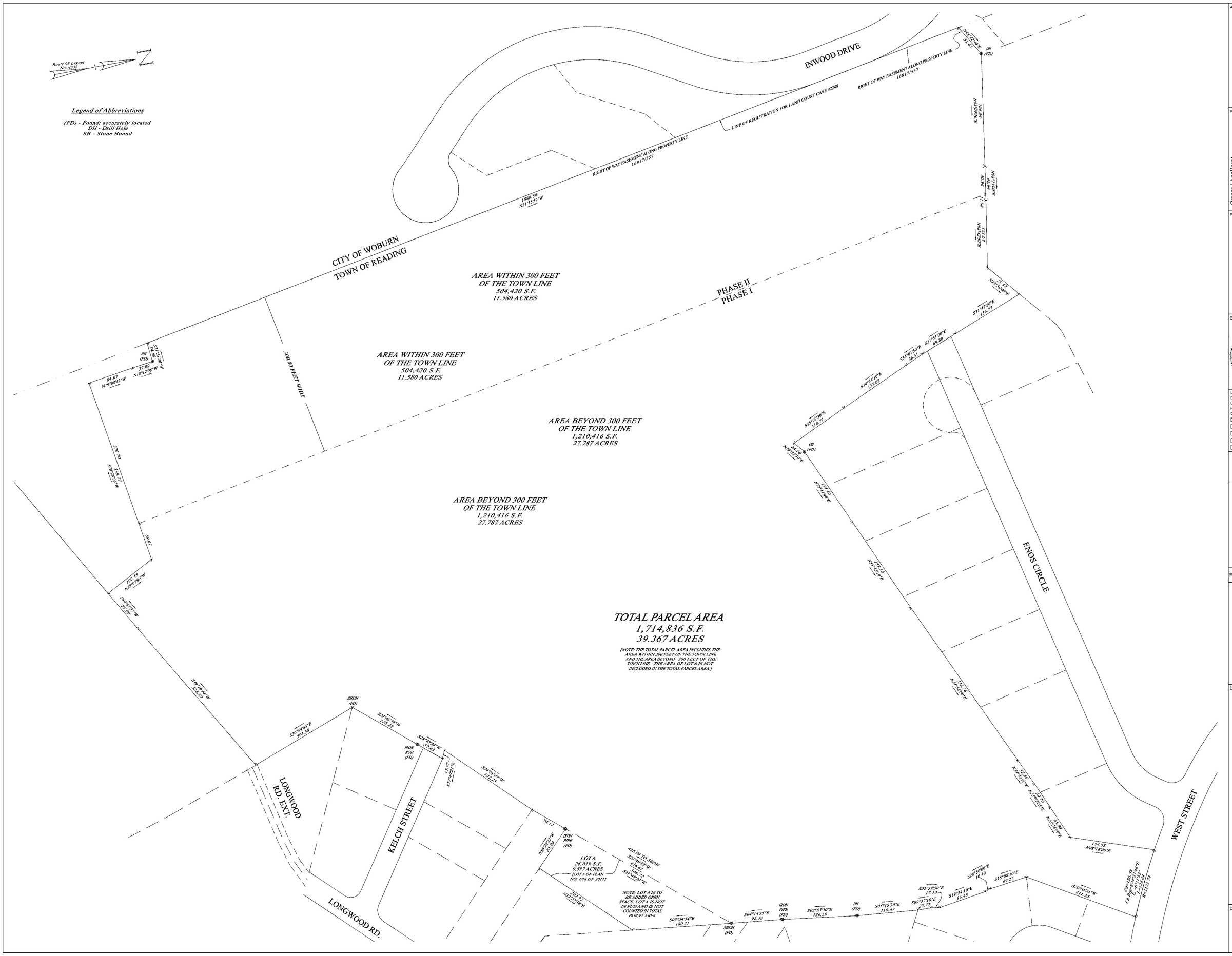
Scale: 1"= 40' hor. & 4' ver.
0' 20' 40' 80'
Date: October 6, 2011

Drawing Title:
PLAN & PROFILE
JOHNSON WOODS
PLANNED UNIT DEVELOPMENT (PHASE II)
READING, MASS.

Drawing No.:
C7

SHEET 7 OF 10



Additional Info:

Prepared For:

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Marblehead, MA 01945

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Seal:

Design By: xxx
Drawn By: MEM
Checked By: WRB
Project File: REA-0316
Comp. No: REA44
☒ Issued For Permit
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☐ Not For Construction

No.	Revision	Date
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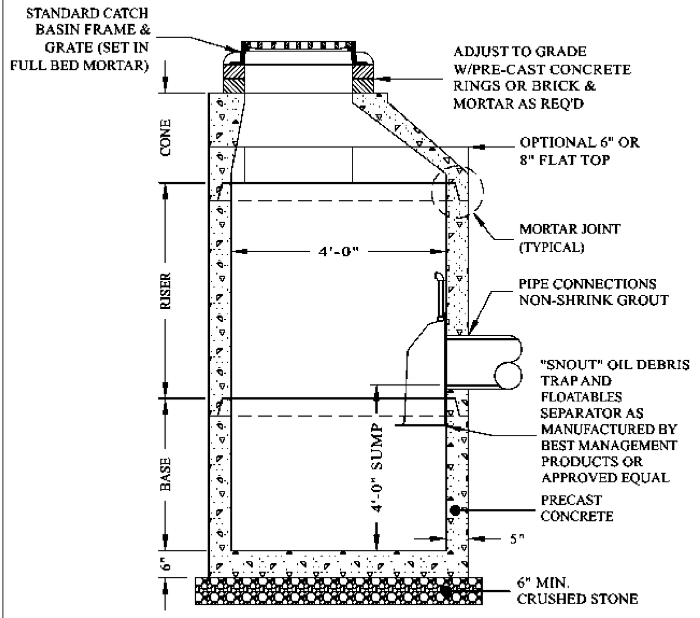
Scale: 1"=50'
0' 25' 50' 100'
Date: October 6, 2011

Drawing Title:
SURVEY PLAN
JOHNSON WOODS
PLANNED UNIT DEVELOPMENT (PHASE II)
READING, MASS.

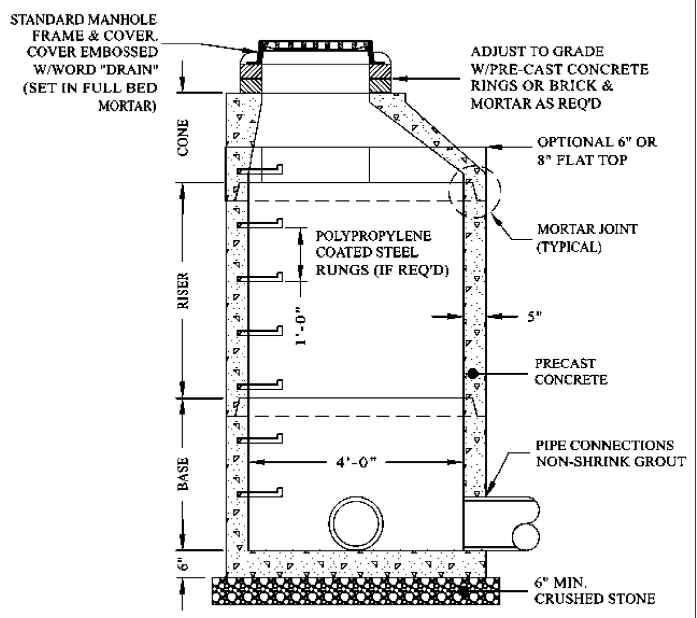
Drawing No.:
C8

SHEET 8 OF 10



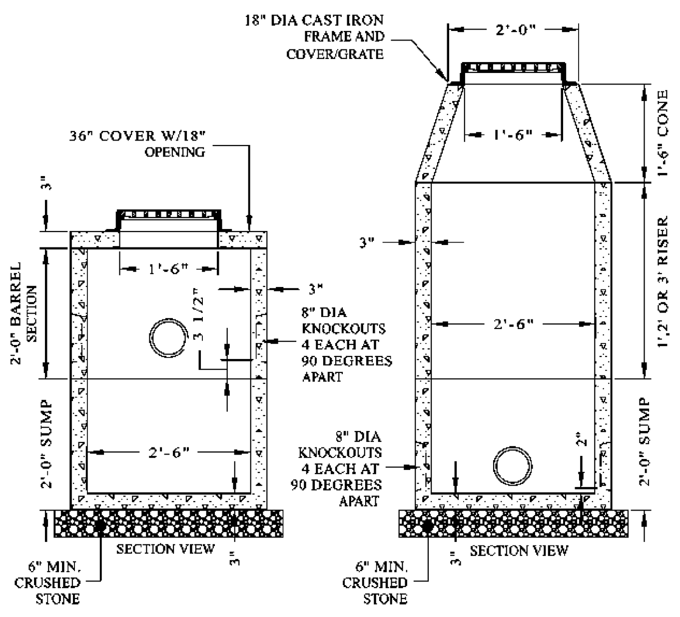
PRE-CAST CATCH BASIN
NOT TO SCALE

NOTES:
1. CONCRETE: 4,000 PSI MINIMUM AFTER 28 DAYS.
2. REINFORCED STEEL CONFORMS TO LATEST ASTM A185 SPEC. 0.12 SQ. IN./LINEAL FT. AND 0.12 SQ. IN. (BOTH WAYS) BASE BOTTOM.
3. H-20 DESIGN LOADING PER AASHTO HS-20-44; ASTM C478 SPEC FOR "PRECAST REINFORCED CONCRETE MANHOLE SECTIONS."
4. ON SLOPES > 6.0% USE LEBARON MODEL NO. 65171-3 FLANGE GRATE OR APPROVED EQUAL



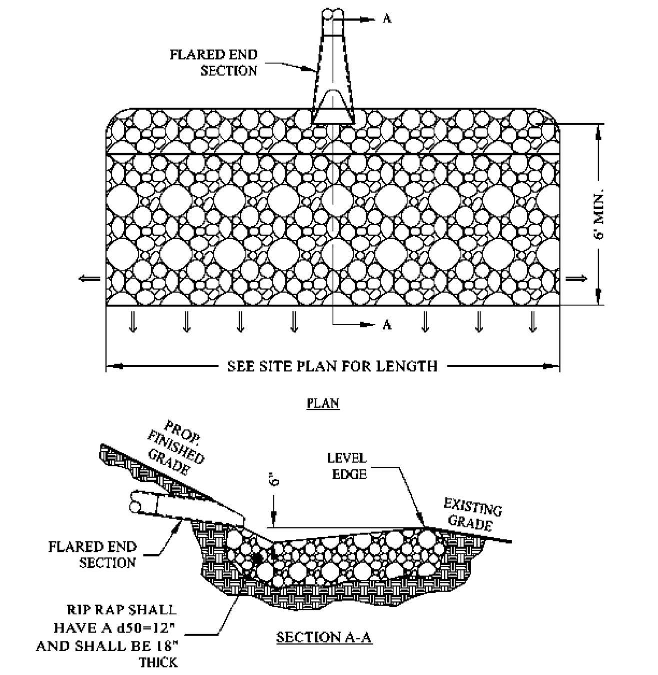
PRE-CAST DRAIN MANHOLE
NOT TO SCALE

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

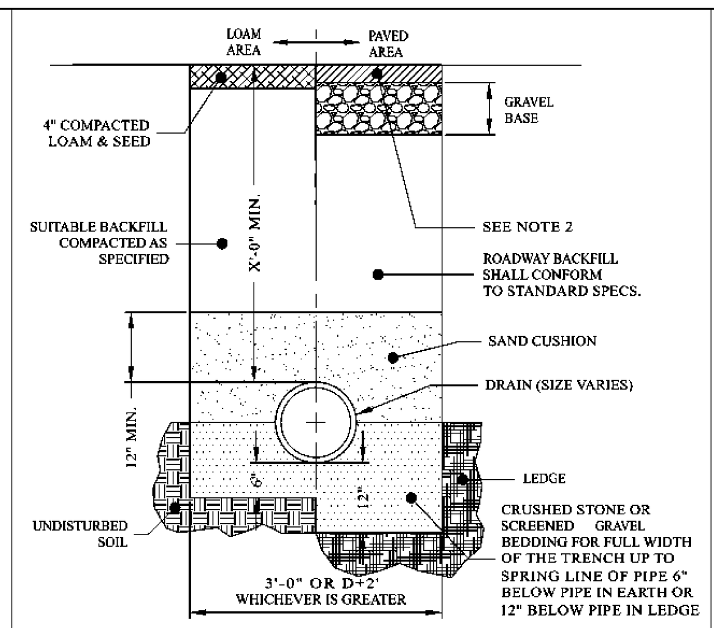


YARD DRAIN
NOT TO SCALE

NOTES:
1. CONCRETE: 4,000 PSI MINIMUM AFTER 28 DAYS.
2. FLAT COVER WITH CLEANOUT CAN BE USED IN PLACE OF CONE.
3. OPTIONAL ROUND CONCRETE COVER CAN BE USED IN PLACE OF CAST IRON FRAME AND COVER.

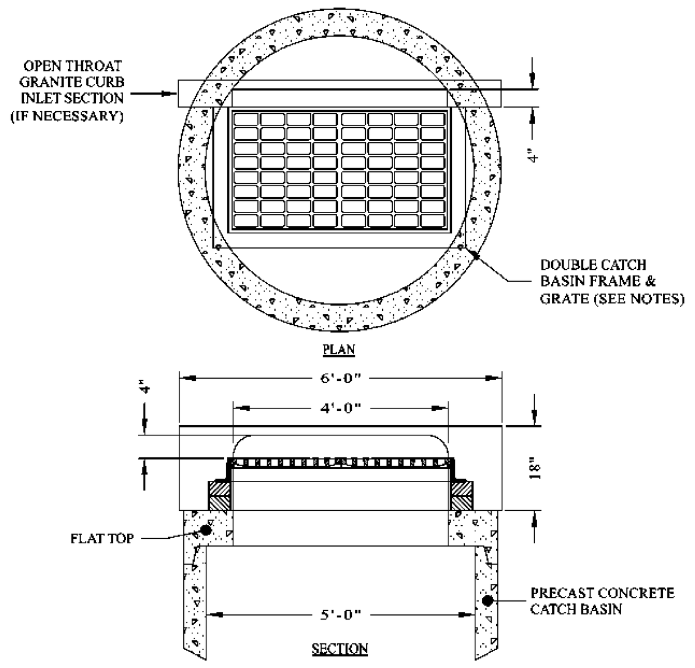


LEVEL SPREADER
NOT TO SCALE



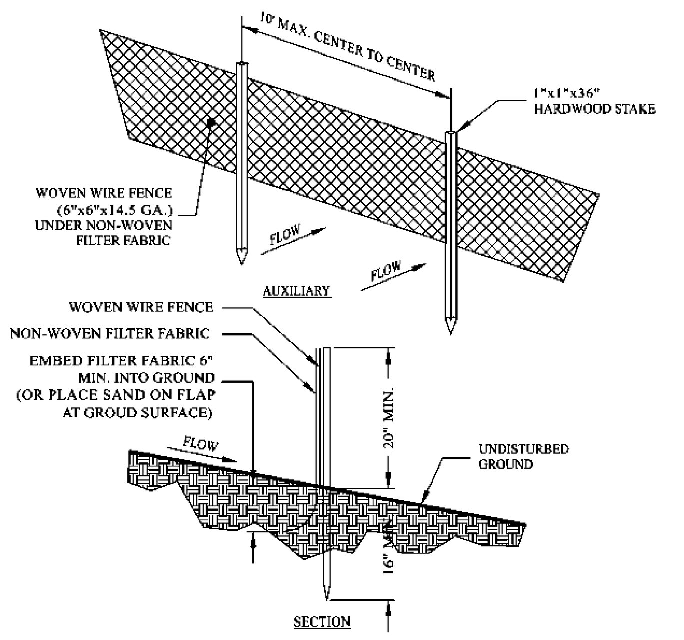
DRAIN TRENCH
NOT TO SCALE

NOTES:
1. ALL MATERIAL SHALL CONFORM TO CITY/TOWN OF DEPARTMENT OF PUBLIC WORKS.
2. NEW ROADWAY CONSTRUCTION SHALL CONFORM TO CITY/TOWN SPECIFICATIONS.
3. IN LIEU OF THE 12" GRAVEL COURSE AND 9" OF CRUSHED GRAVEL, 18" OF CRUSHED GRAVEL OR RECLAIMED STABILIZED BASE MAY BE USED AS A BASE FOR THE PAVEMENT REPAIR.
4. MATERIAL SHALL BE REPLACED IN KIND WHENEVER POSSIBLE.
5. A MINIMUM 2' CUTBACK IS REQUIRED AT THE TOP OF THE TRENCH WALL OVER UNDISTURBED MATERIAL.



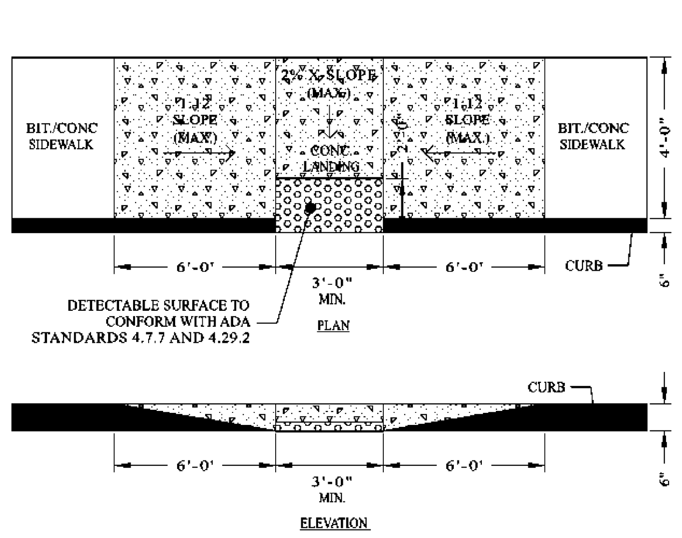
DOUBLE FRAME & GRATE
NOT TO SCALE

NOTES:
1. ON SLOPES USE LEBARON LV2448-2-000 FRAME W/LEBARON LK120D-300 3 FLANGE CASCADE GRATE OR APPROVED EQUAL.
2. AT LOW POINTS USE LEBARON LV2448-2-000 FRAME W/LEBARON LF248-2-000 3 FLANGE GRATE OR APPROVED EQUAL.



SILT FENCE
NOT TO SCALE

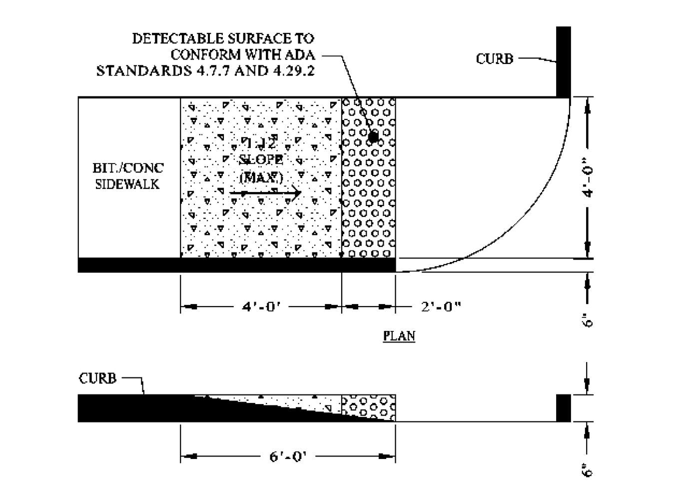
NOTES:
1. WOVEN WIRE FENCE (6"X6"X14.5 GA.) UNDER NON-WOVEN FILTER FABRIC TO BE USED AT ALL WETLAND CROSSINGS AND ALL AREAS WITHIN 25' OF THE WETLAND LINE. ALL OTHER LOCATIONS THE FILTER FABRIC TO BE UV RESISTANT POLYPROPYLENE WITH A MINIMUM WEIGHT OF 2.5 OZ./SY.
2. USE MULTIPLE ROWS OF SILT FENCE FOR LONG STEEP SLOPES IF NECESSARY.



4.29.2 DETECTABLE WARNINGS ON WALKING SURFACES . "DETECTABLE WARNINGS SHALL CONSIST OF RAISED TRUNCATED DOMES WITH A DIAMETER OF NOMINAL 0.9", A HEIGHT OF NOMINAL 0.2" AND A CENTER-TO-CENTER SPACING OF NOMINAL 2.35" AND SHALL CONTRAST VISUALLY WITH ADJOINING SURFACES, EITHER LIGHT ON DARK, OR DARK ON LIGHT."

WHEELCHAIR RAMP
NOT TO SCALE

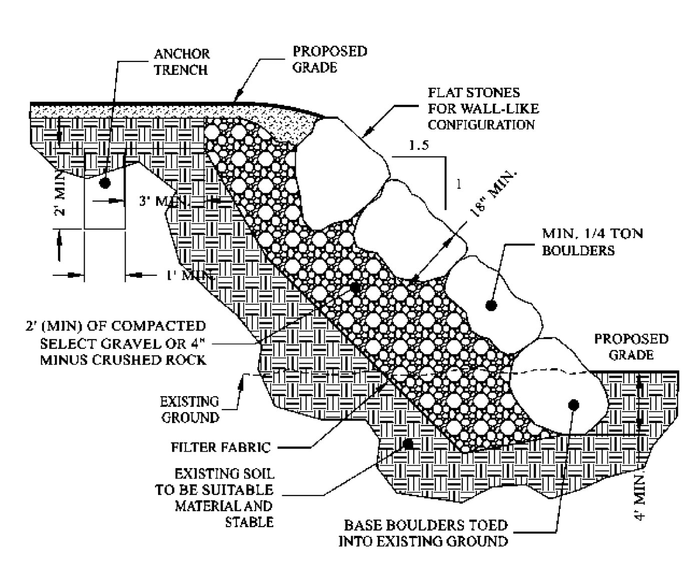
NOTE:
WHEELCHAIR RAMP SHALL COMPLY WITH ALL STATE AND FEDERAL RULES AND REGULATIONS.



4.29.2 DETECTABLE WARNINGS ON WALKING SURFACES . "DETECTABLE WARNINGS SHALL CONSIST OF RAISED TRUNCATED DOMES WITH A DIAMETER OF NOMINAL 0.9", A HEIGHT OF NOMINAL 0.2" AND A CENTER-TO-CENTER SPACING OF NOMINAL 2.35" AND SHALL CONTRAST VISUALLY WITH ADJOINING SURFACES, EITHER LIGHT ON DARK, OR DARK ON LIGHT."

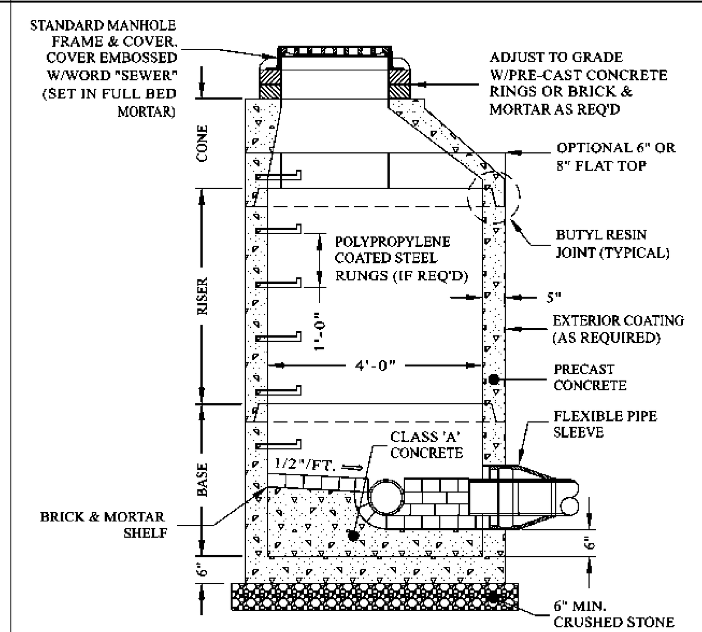
WHEELCHAIR RAMP
NOT TO SCALE

NOTE:
WHEELCHAIR RAMP SHALL COMPLY WITH ALL STATE AND FEDERAL RULES AND REGULATIONS.



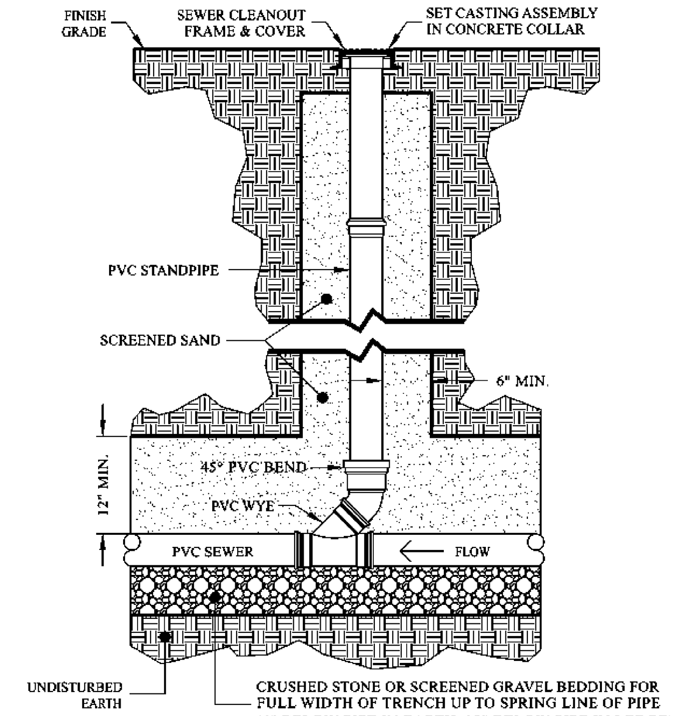
1.5:1 RIPRAP SLOPE
NOT TO SCALE

NOTES:
1. AREAS TO BE PROTECTED BY REVETMENT SHALL BE FREE OF BRUSH, TREES, STUMPS & OTHER ORGANIC MATERIAL & BE DRESSED TO A SMOOTH SURFACE. ALL SOFT OR SPONGY MATERIAL SHALL BE REMOVED TO THE DEPTH SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER & REPLACED WITH APPROVED MATERIALS.
2. THE STONES SHALL BE PLACED UPON AN APPROVED BED TO LINES & GRADES SHOWN ON PLAN. EACH STONE SHALL BE CAREFULLY PLACED BY HAND OR MACHINE, ON A PREPARED BED NORMAL TO THE SLOPE AND FIRMLY BEDDED THEREON THE LARGE STONES SHALL BE PLACED CLOSELY TOGETHER & THE INTERVENING SPACES FILLED WITH SMALLER STONES IN SUCH A MANNER THAT THE ENTIRE SURFACE WILL FORM A COMPACT MASS.

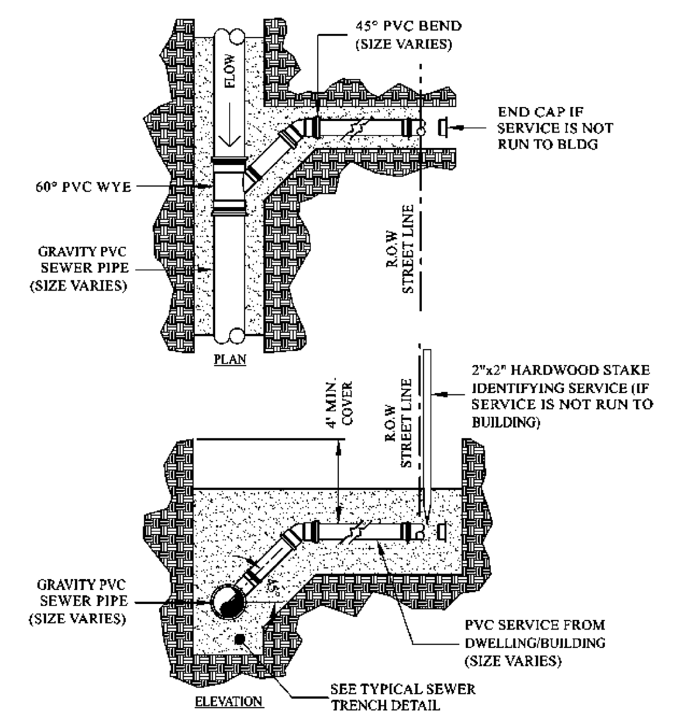


PRE-CAST SEWER MANHOLE
NOT TO SCALE

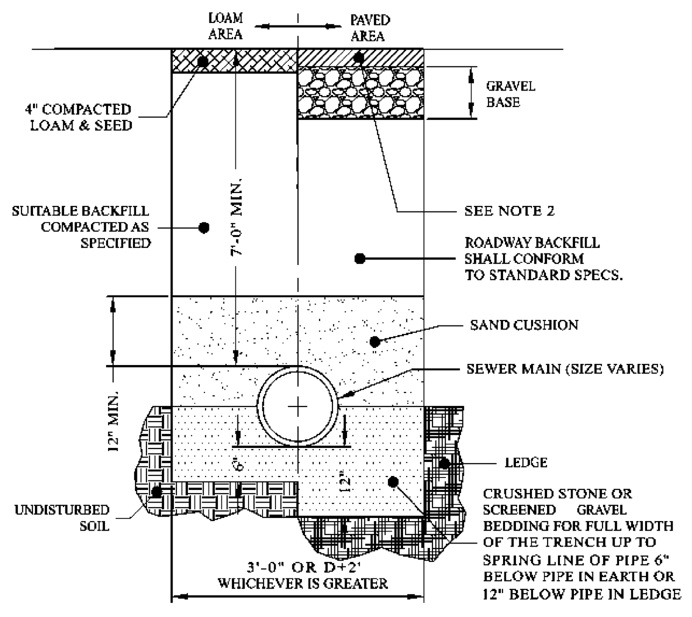
NOTES:
1. CONCRETE: 4,000 PSI MINIMUM AFTER 28 DAYS.
2. REINFORCED STEEL CONFORMS TO LATEST ASTM A185 SPEC. 0.12 SQ. IN./LINEAL FT. AND 0.12 SQ. IN. (BOTH WAYS) BASE BOTTOM.
3. H-20 DESIGN LOADING PER AASHTO HS-20-44; ASTM C478 SPEC FOR "PRECAST REINFORCED CONCRETE MANHOLE SECTIONS."



SEWER SERVICE CLEANOUT
NOT TO SCALE



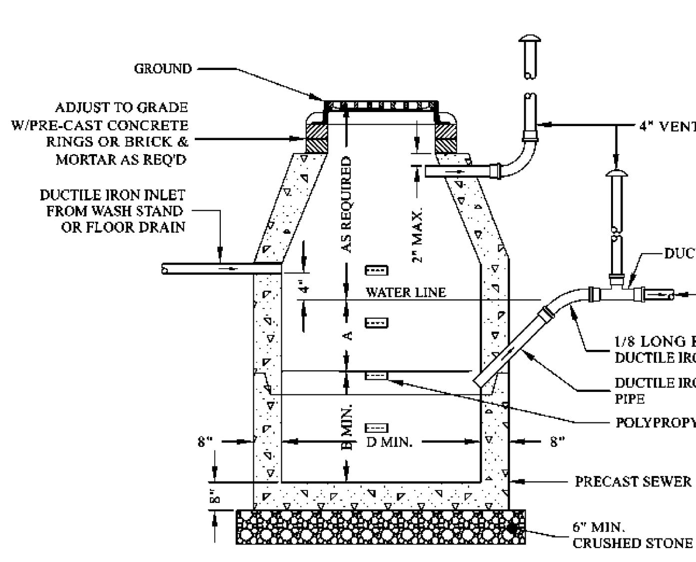
SEWER SERVICE CONNECTION
NOT TO SCALE



SEWER TRENCH
NOT TO SCALE

NOTES:
1. ALL MATERIAL SHALL CONFORM TO CITY/TOWN OF DEPARTMENT OF PUBLIC WORKS.
2. NEW ROADWAY CONSTRUCTION SHALL CONFORM TO CITY/TOWN SPECIFICATIONS.
3. IN LIEU OF THE 12" GRAVEL COURSE AND 9" OF CRUSHED GRAVEL, 18" OF CRUSHED GRAVEL OR RECLAIMED STABILIZED BASE MAY BE USED AS A BASE FOR THE PAVEMENT REPAIR.
4. MATERIAL SHALL BE REPLACED IN KIND WHENEVER POSSIBLE.
5. A MINIMUM 2' CUTBACK IS REQUIRED AT THE TOP OF THE TRENCH WALL OVER UNDISTURBED MATERIAL.

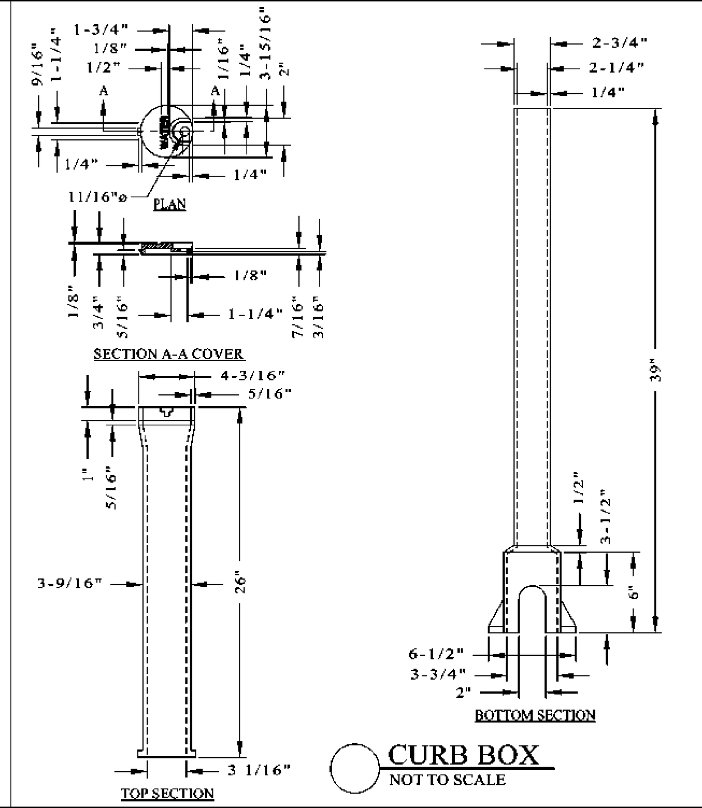
3'-0"	2'-6"	3'-6"	5'-0"	4'-6"	4'-0"	6'-0"	5'-0"	5'-0"
5'-0"	4'-0"	3'-6"	4'-0"	3'-6"	4'-0"x4'-0"	4'-6"	4'-0"	5'-6"x5'-6"
4'-0"	3'-0"	3'-6"x3'-6"	4'-0"	3'-6"	4'-6"	4'-0"	3'-6"	6'-0"
3'-6"	3'-0"	4'-0"	3'-6"	3'-0"	4'-6"x4'-6"	3'-0"	2'-6"	6'-0"x6'-0"
3'-0"	2'-6"	4'-0"x4'-0"	3'-6"	3'-0"	5'-0"	3'-6"	3'-0"	6'-6"
3'-0"	2'-6"	4'-6"	3'-0"	2'-6"	5'-0"x5'-0"	3'-0"	2'-6"	6'-6"x6'-6"



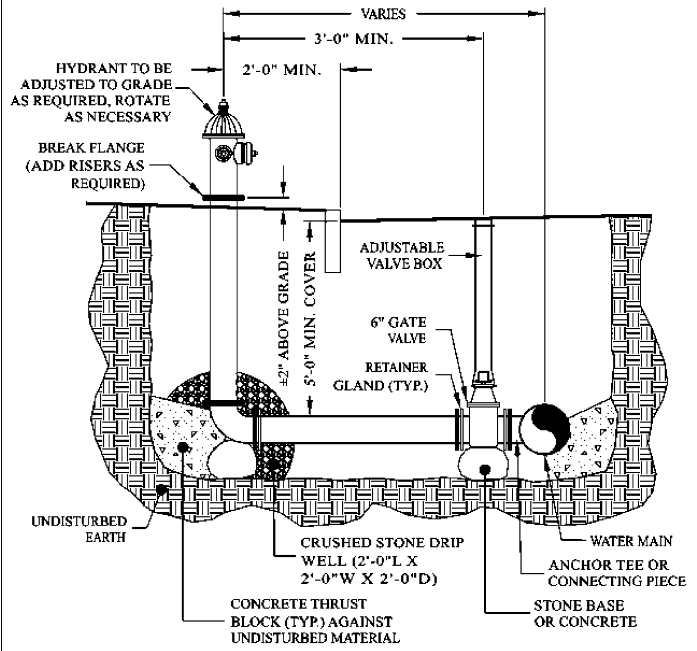
SEWER GAS TRAP
NOT TO SCALE

GENERAL CONSTRUCTION NOTES

1. MANHOLE TO BE LOCATED OUTSIDE OF BUILDING WHERE POSSIBLE, COVER TO HAVE A CENTER HOLE.
2. A TIGHT COVER MUST BE USED IF MANHOLE IS LOCATED INSIDE OF BUILDING.
3. OPENING SHALL BE NOT LESS THAN 24" DIA.
4. THE MANHOLE SHALL BE SO LOCATED AND CONSTRUCTED THAT SURFACE WATER SHALL BE EXCLUDED.
5. INLET PIPE SHALL BE AT LEAST FOUR INCHES ABOVE NORMAL WATER LINE.
6. WHERE SUBJECT TO FROST OR CRUSHING CONDITIONS, OUTLET SHALL BE AT LEAST THREE FEET BELOW THE SURFACE.
7. THE NEW MANHOLE MUST BE FILLED WITH CLEAN WATER BEFORE USING, AND AFTER BEING EMPTIED FOR PERIODIC CLEANING.
8. ALL OIL AND GASOLINE MUST BE REMOVED BEFORE CLEANING OUT THE MANHOLE, AND MUST NOT BE DISCHARGED INTO THE SEWER THROUGH OTHER FIXTURES.
9. SPECIFICATIONS FOR COVERING SPECIAL CASES OR CONDITIONS, SHALL BE APPROVED BY THE LOCAL AUTHORITIES, AND THE AUTHORITIES OF THE COMMONWEALTH OF MASSACHUSETTS.
10. POLYPROPYLENE STEPS SHALL BE SPACED ABOUT 18" APART.
11. BOTH VENTS SHALL BE EXTENDED INDEPENDENTLY 18" ABOVE THE ROOF, OR AS APPROVED BY THE LOCAL AUTHORITIES, AND THE AUTHORITIES OF THE COMMONWEALTH OF MASSACHUSETTS.

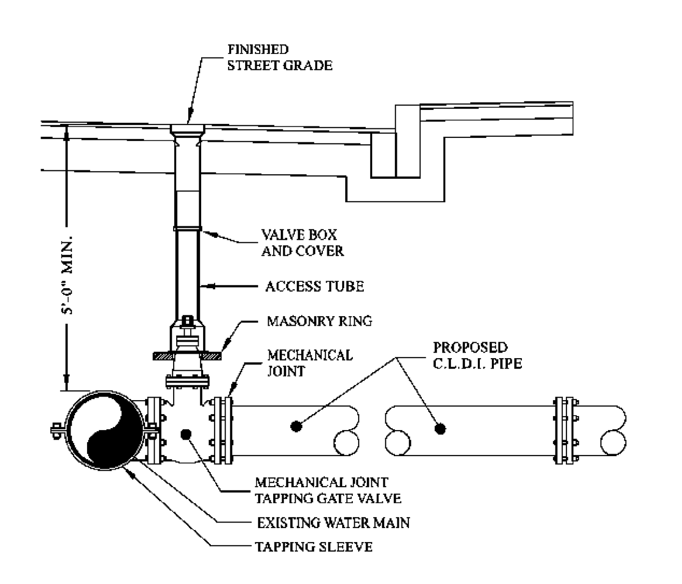


CURB BOX
NOT TO SCALE



HYDRANT & VALVE BOX
NOT TO SCALE

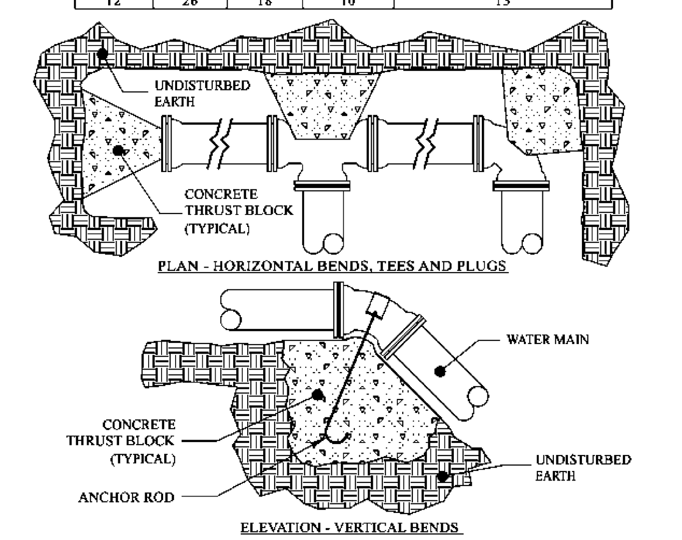
NOTES:
1. ALL MATERIALS SHALL CONFORM TO CITY/TOWN OF DEPARTMENT OF PUBLIC WORKS.
2. WATER MAIN SHALL HAVE A MINIMUM PIPE DEPTH OF 5'-0".
3. VALVES AND HYDRANTS TO OPEN COUNTER CLOCKWISE.
4. PROVIDE 4 CUBIC FEET OF SCREENED GRAVEL OR GRAVEL BACKFILL TO AT LEAST 6 INCHES ABOVE DRAIN HOLES.



TAPPING SLEEVE & GATE
NOT TO SCALE

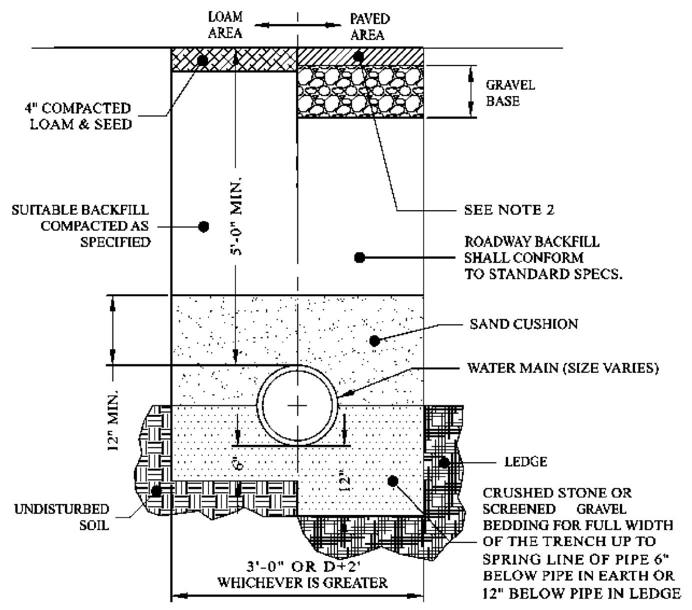
NOTES:
1. CONCRETE THRUST BLOCK TO BE USED ONLY WHERE IT WILL BEAR ON UNDISTURBED EARTH.
2. USE RESTRAINED JOINT FITTINGS OR TIE RODS WHERE CONCRETE THRUST BLOCK IS UNACCEPTABLE.
3. SIZE OF BLOCK OR MEGALUG TO BE DESIGNED FOR SPECIFIC CONDITIONS.

PIPE SIZE (in.)	90° BEND (s.f.)	45° BEND (s.f.)	22.5° BEND (s.f.)	TEES,PLUGS,CAPS & HYDRANTS (s.f.)
6	8	5	3	4
8	12	8	5	6
10	19	13	7	9
12	26	18	10	13



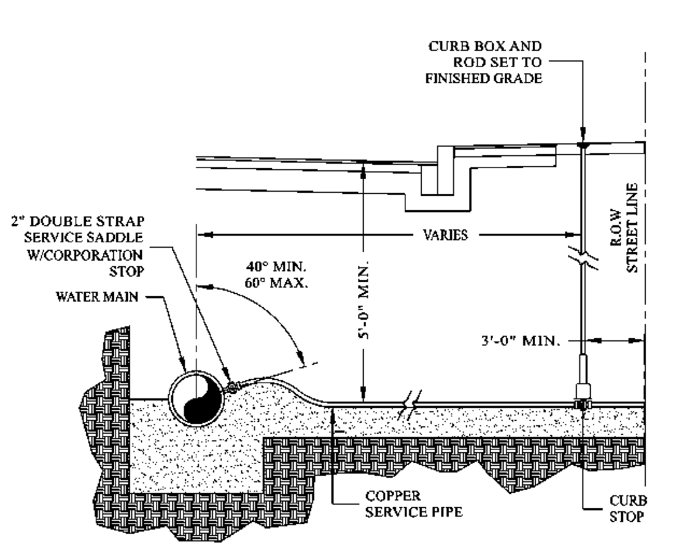
THRUST BLOCK
NOT TO SCALE

NOTES:
1. THRUST BLOCKS TO BE 3000 PSI CONCRETE PLACED AGAINST UNDISTURBED MATERIAL. KEEP CONCRETE CLEAR OF MECHANICAL JOINTS.
2. STONE BACKING MAY BE SUBSTITUTED FOR CONCRETE THRUST BLOCKS PROVIDED THE STONE(S) ARE OF EQUAL SIZE AND BEAR ON UNDISTURBED EARTH.
3. USE OF JOINT RESTRAINT SYSTEMS SHALL NOT ELIMINATE THRUST BLOCK REQUIREMENTS (WHERE POSSIBLE).



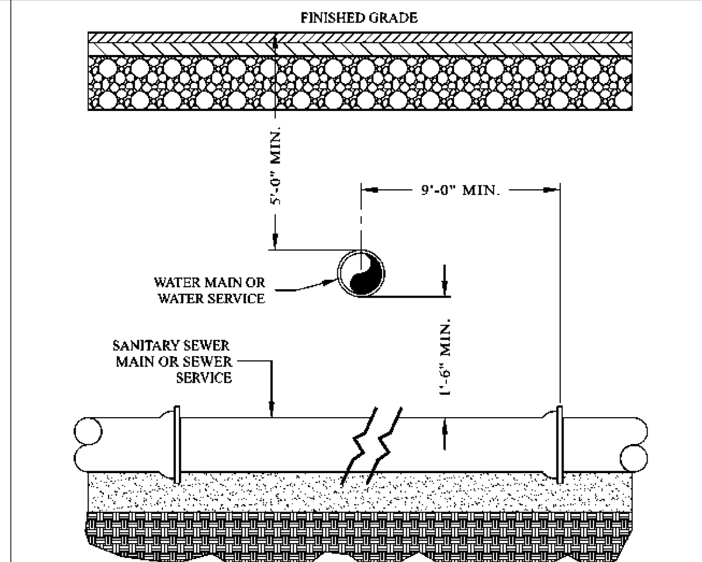
WATER TRENCH
NOT TO SCALE

NOTES:
1. ALL MATERIAL SHALL CONFORM TO CITY/TOWN OF DEPARTMENT OF PUBLIC WORKS.
2. NEW ROADWAY CONSTRUCTION SHALL CONFORM TO CITY/TOWN SPECIFICATIONS.
3. IN LIEU OF THE 12" GRAVEL COURSE AND 9" OF CRUSHED GRAVEL, 18" OF CRUSHED GRAVEL OR RECLAIMED STABILIZED BASE MAY BE USED AS A BASE FOR THE PAVEMENT REPAIR.
4. MATERIAL SHALL BE REPLACED IN KIND WHENEVER POSSIBLE.
5. A MINIMUM 2' CUTBACK IS REQUIRED AT THE TOP OF THE TRENCH WALL OVER UNDISTURBED MATERIAL.



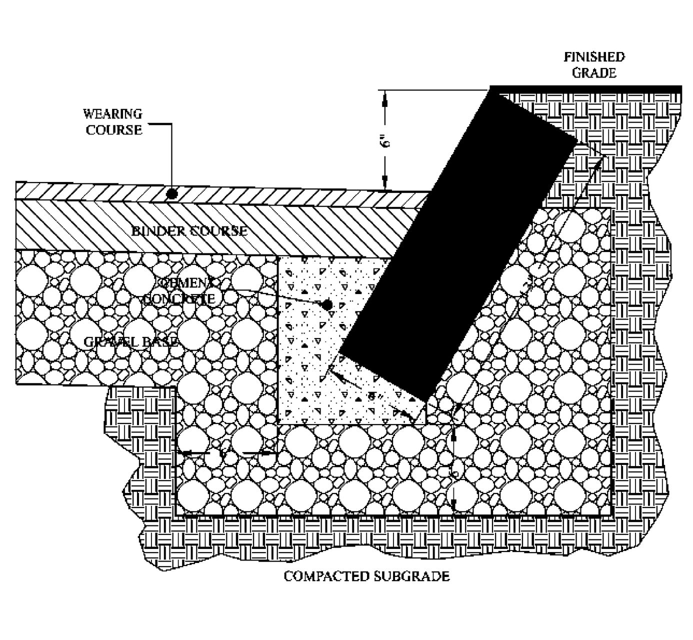
WATER SERVICE CONNECTION
NOT TO SCALE

NOTES:
1. CORPORATIONS 1-1/2" DIA. AND GREATER SHALL BE INSTALLED USING A TAPPING SADDLE AND SHELL CUTTER.
2. WHERE WATER SERVICE MUST CROSS SEWER MAIN, MAINTAIN A MINIMUM 18" CLEARANCE ABOVE THE SEWER MAIN WHILE MAINTAINING A DEPTH OF 5'-0" BELOW SURFACE. TO MAINTAIN 18" OF CLEARANCE FROM SEWER, THE 5'-0" DEPTH MAY BE REDUCED BY INSTALLING A 2" LAYER OF RIGID FOAM INSULATION ABOVE THE WATER SERVICE FOR EVERY FOOT THE DEPTH IS REDUCED.
3. ACTUAL SERVICE LOCATIONS WILL BE DETERMINED IN FIELD TO SAVE SPECIMEN TREES.



WATER/SEWER CROSSING
NOT TO SCALE

NOTES:
1. WHEREVER FEASIBLE, SEWERS WILL BE LAID AT A MINIMUM OF 10 FEET, HORIZONTALLY, FROM ANY EXISTING OR PROPOSED WATER MAIN. SHOULD LOCAL CONDITIONS PREVENT A LATERAL SEPARATION OF 10 FEET TO A WATER MAIN THE SEWER MAIN WILL BE LAID IN A SEPARATE TRENCH AND THE ELEVATION OF THE CROWN OF THE SEWER PLACED AT LEAST 18 INCHES BELOW THE INVERT OF THE WATER MAIN. WHENEVER SEWERS MUST CROSS UNDER WATER MAINS, THE SEWER SHALL BE LAID AT SUCH AN ELEVATION THAT THE CROWN OF THE SEWER IS AT LEAST 18 INCHES BELOW THE INVERT OF THE WATER MAIN. WHEN IT IS IMPOSSIBLE TO OBTAIN HORIZONTAL OR VERTICAL SEPARATION AS STIPULATED ABOVE, BOTH THE WATER MAIN AND SEWER SHOULD BE ENCASED IN CONCRETE FOR 10 FEET EITHER SIDE OF THE CROSSING.
2. IN LOCATIONS WHERE THE SEWER MAIN DOES NOT HAVE 48" OF COVER THE MAIN WILL BE INSULATED.



SLOPED GRANITE CURB
NOT TO SCALE

Additional Info:

Prepared For:

Owner / Applicant
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c/o Glover Property Management, Inc.
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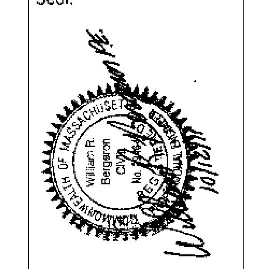
Seal:



Design By: xxx
Drawn By: MEM
Checked By: WRB
Project File: REA-0316
Comp. No: REA44

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1		
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Scale: None
Date: October 6, 2011

Drawing Title:
SITE DETAILS PLAN
JOHNSON WOODS
PLANNED UNIT DEVELOPMENT (PHASE II)
READING, MASS.

Drawing No.:
C9

SHEET 9 OF 10

LUMINAIRE SCHEDULE

SYMBOL	LABEL	QUANTITY	CATALOG NUMBER HADCO LIGHTING	DESCRIPTION	LAMP	TILT	PHOTOMETRIC FILE	INITIAL LUMENS	LLF
☼	A	18	V681 A T3 ? D 70H E FINISH, ELECTRICAL & POLE TO BE DETERMINED BY OTHERS	TYPE III DISTRIBUTION 10' MOUNTING HEIGHT (SINGLE LAMP)	70 WATT METAL HALIDE	0°	V681-17H3H.ies	5,900 (DERATED)	0.8

DENOTES ISOFOOTCANDLE VALUE

GENERAL LIGHTING NOTES:

ILLUMINANCE VALUES SHOWN ARE PROPOSED MAINTAINED HORIZONTAL FOOTCANDLES ON LEVEL GRADE.

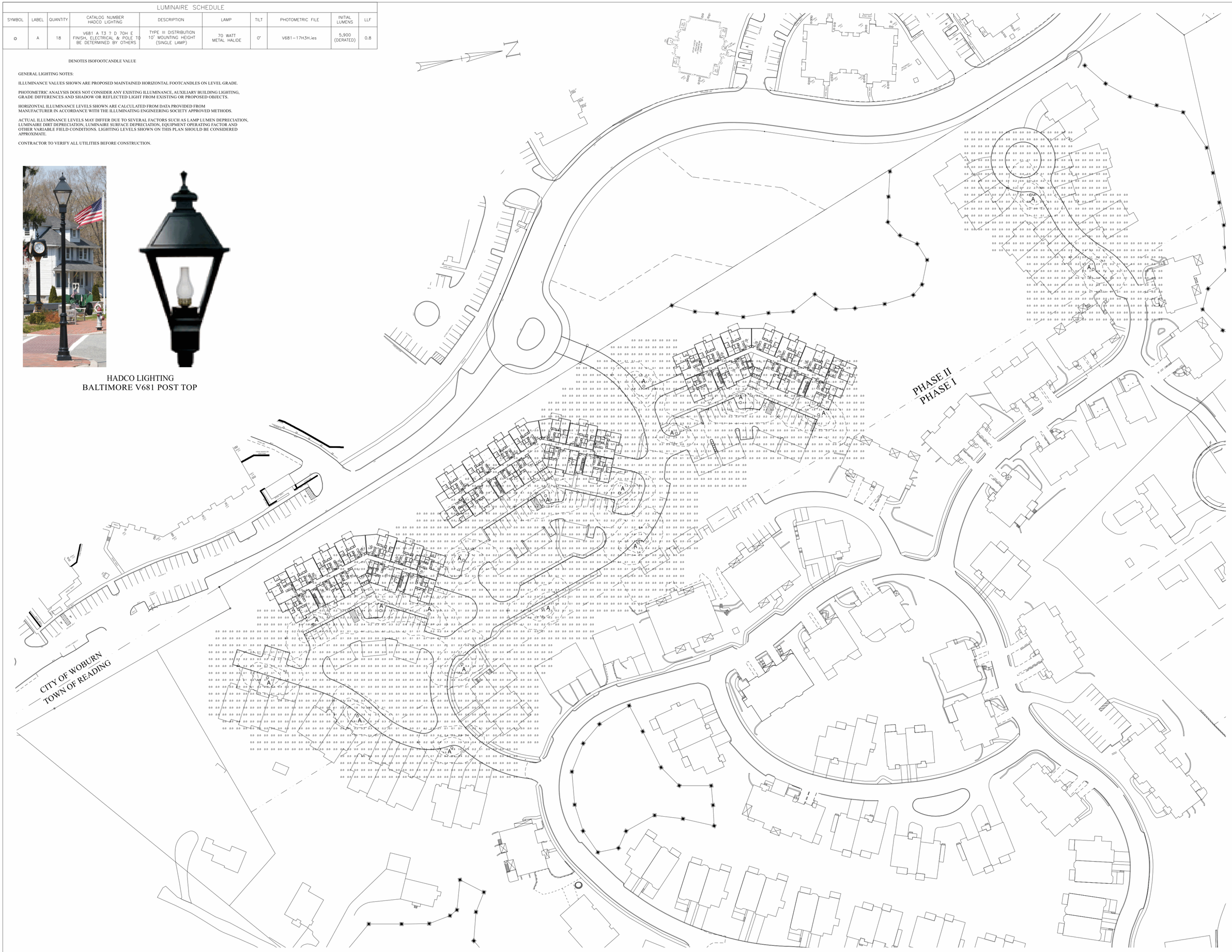
PHOTOMETRIC ANALYSIS DOES NOT CONSIDER ANY EXISTING ILLUMINANCE, AUXILIARY BUILDING LIGHTING, GRADE DIFFERENCES AND SHADOW OR REFLECTED LIGHT FROM EXISTING OR PROPOSED OBJECTS.

HORIZONTAL ILLUMINANCE LEVELS SHOWN ARE CALCULATED FROM DATA PROVIDED FROM MANUFACTURER IN ACCORDANCE WITH THE ILLUMINATING ENGINEERING SOCIETY APPROVED METHODS.

ACTUAL ILLUMINANCE LEVELS MAY DIFFER DUE TO SEVERAL FACTORS SUCH AS LAMP LUMEN DEPRECIATION, LUMINAIRE DIRT DEPRECIATION, LUMINAIRE SURFACE DEPRECIATION, EQUIPMENT OPERATING FACTOR AND OTHER VARIABLE FIELD CONDITIONS. LIGHTING LEVELS SHOWN ON THIS PLAN SHOULD BE CONSIDERED APPROXIMATE.

CONTRACTOR TO VERIFY ALL UTILITIES BEFORE CONSTRUCTION.

HADCO LIGHTING
BALTIMORE V681 POST TOP



Additional Info:

Prepared For:

Owner / Applicant

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Prepared By:

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Seal:

Design By: xxx
Drawn By: MEM
Checked By: WRB
Project File: REA-0316
Comp. No: REA44

- ☒ Issued For Permit
- ☐ Issued For Review
- ☐ Issued For Bid
- ☐ Issued For Construction
- ☐ Not For Construction

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

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

Date: October 17, 2011

Drawing Title:

PHOTOMETRIC PLAN
JOHNSON WOODS
PLANNED UNIT DEVELOPMENT (PHASE I)
READING, MASS.

Drawing No.:

P1

SHEET 1 OF 1