

SITE DATA

LOT AREA: 15.17± AC. (660,575 SF)
WATER SUPPLY: MUNICIPAL
APPROXIMATE WATER USE: 3,720 GPD
SEWAGE DISPOSAL: ONSITE SEWAGE DISPOSAL SYSTEM
APPROXIMATE SEWAGE FLOW: 3,720 GPD [SEE SHEET C3.1]
ZONING DISTRICT: RESIDENTIAL
OVERLAY DISTRICT: AQUIFER & WATER RESOURCE

ASSESSORS REFERENCE

ASSESSORS PARCEL MAP U19, PARCEL 38
RECORD OWNER: CRAIG C. GRUSKOWSKI & HEIDI PLATT GRUSKOWSKI
338 KING ST. LITTLETON, MA 01460
ASSESSORS PARCEL MAP U19, PARCEL 38-1
RECORD OWNER: CRAIG C. GRUSKOWSKI & HEIDI PLATT GRUSKOWSKI,
TRUSTEES OF PAINLESS REALTY TRUST
338 KING ST. LITTLETON, MA 01460

SENIOR RESIDENTIAL DEVELOPMENT

PARAMETER	FORMULA	VARIABLE	REQUIRED	PROVIDED
Two-Family Dwelling Units	4 Units/Acre	6 Units	1.5 AC.	
Townhouse Dwelling Units	8 Units/Acre	3 Units	0.38 AC.	
Independent Living Units	20 Units/Acre	24 Units	0.75 AC.	
Total Site Area			2.63 AC.	15.17 AC.
Minimum Open Space	30% Parcel Area	660,575± SF	198,173± SF	608,537± SF
Contiguous Upland Area	80% Min. Open Space Area	198,173± SF	158,535± SF	168,545± SF

PARKING COMPUTATIONS

USE	FORMULA	VARIABLE	REQUIRED SPACES	PROVIDED SPACES
Town House & Cottage Dwellings	2 Spaces per Unit	9 Units	18	
Independent Living Units	1 Space per Unit	15 Units	15	
Guest Parking	1 Space per 3 Units	24 Units	8	

Total Parking Spaces 41 42
NOTES: 1. See Zoning Bylaw section 173-148(F).

COVERAGE COMPUTATIONS

PARAMETER	AREA (AC)	AREA (SF)	% OF TOTAL LOT AREA
EXISTING CONDITION			
Lot Area	15.17±	660,575±	100%
Buildings & Decks	0.17±	7,251±	1.1%
Pavement, Walks, and Misc. Impervious	0.42±	18,495±	2.8%
Pond	0.26±	11,183±	1.7%
TOTAL IMPERVIOUS AREA	0.85±	36,929±	5.6%
PROPOSED CONDITION			
Lot Area	15.17±	660,575±	100%
Buildings & Decks	0.64±	27,790±	4.2%
Pavement, Walks, and Misc. Impervious	0.50±	21,977±	3.3%
Pond	0.26±	11,183±	1.7%
TOTAL IMPERVIOUS AREA	1.38±	60,275±	9.1%

PLAN REFERENCES

- "ORDER OF RESOURCE AREA DELINEATION" PREPARED FOR MASSACHUSETTS COHOUSING LLC. BY THE LITTLETON CONSERVATION COMMISSION, DATED MARCH 23, 2020. RECORDED AT THE MIDDLESEX SOUTH REGISTRY OF DEEDS BK: 74331 PG: 23.
- "SEWAGE DISPOSAL SYSTEM--338 KING STREET LITTLETON, MA" DESIGNED FOR CRAIG & HEIDI GRUSKOWSKI BY DAVID E. ROSS ASSOCIATES, INC. DATED JULY 1997.
- "SUBSURFACE SEWAGE DISPOSAL SYSTEM--336 KING STREET LITTLETON, MA" DESIGNED FOR RONALD COOPER BY WHITMAN & BINGHAM ASSOCIATES, INC. DATED MAY 31, 1993.
- "LEACHING SYSTEM REPAIR--CONGREGATIONAL CHURCH OF LITTLETON--308 KING STREET LITTLETON, MA" DESIGNED FOR CONGREGATIONAL CHURCH OF LITTLETON BY WARREN W. TERRELL, P.E. DATED AUGUST 1990. REVISED THROUGH 4/20/91.
- "SUBSURFACE SEWAGE DISPOSAL SYSTEM--NEW CONSTRUCTION--HAGER HOMESTEAD--336--338 KING STREET LITTLETON, MA" PREPARED FOR MASSACHUSETTS COHOUSING, LLC. BY GOLDSMITH, PREST & RINGWALL, INC. DATED TBD.

EXISTING CONDITION NOTES:

- EXISTING CONDITION INFORMATION SHOWN IS BASED ON AN INSTRUMENT SURVEY PERFORMED BY GOLDSMITH, PREST & RINGWALL, INC. DURING OCTOBER 2019.
- THE EDGE OF WETLAND AND RIVER HAS BEEN DELINEATED BY OXBOW ASSOCIATES, INC. OCTOBER 2019 THROUGH NOVEMBER 2019, AND APPROVED BY THE LITTLETON CONSERVATION COMMISSION MARCH 23, 2020 [SEE PLAN REFERENCE #1].
- DELINEATION OF EXISTING POND AND TRENCHES WITHIN THE WETLANDS ARE APPROXIMATE AND ARE BASED ON ARIEL IMAGES FROM GOOGLE EARTH.

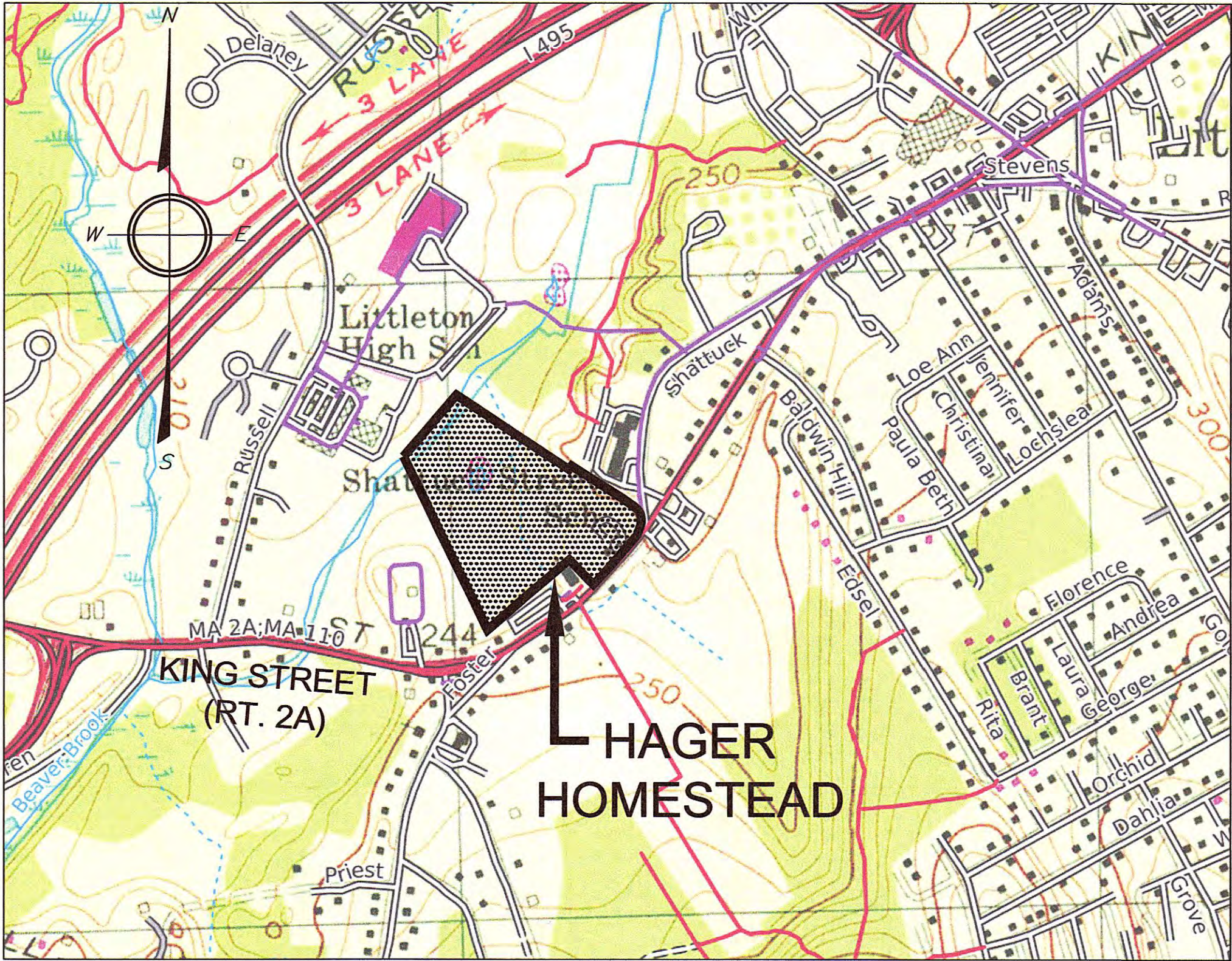
GENERAL NOTES

- LOCATIONS OF EXISTING UNDERGROUND UTILITIES/OBSTRUCTIONS/SYSTEMS SHOWN HEREON ARE APPROXIMATE ONLY. ALL UTILITIES/OBSTRUCTIONS/SYSTEMS MAY NOT BE SHOWN. CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING AND PROTECTING ALL UNDERGROUND UTILITIES/OBSTRUCTIONS/SYSTEMS, WHETHER OR NOT SHOWN HEREON.
- UNLESS OTHERWISE SHOWN, ALL NEW UTILITIES SHALL BE UNDERGROUND.
- BURIED UTILITIES SHALL BE INSTALLED IN ACCORDANCE WITH THEIR RESPECTIVE COMPANY SPECIFICATIONS.
- CONSTRUCTION LAYOUT AND SITE IMPROVEMENTS SHALL BE PERFORMED BY A LICENSED PROFESSIONAL LAND SURVEYOR. LOCATIONS OF EXISTING FEATURES OR PROPOSED IMPROVEMENTS DERIVED BY SCALING DRAWINGS MAY NOT BE ACCURATE. PROPERTY LINES SHOWN HEREON ARE APPROXIMATE. SEE PLAN REFERENCE HEREON.
- SAFETY MEASURES, CONSTRUCTION METHODS, AND CONTROL OF WORK SHALL BE RESPONSIBILITY OF CONTRACTOR.
- CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIR AND/OR REPLACEMENT OF ANY EXISTING UTILITY OR STRUCTURE DAMAGED DURING CONSTRUCTION THAT ARE NOT DESIGNATED FOR DEMOLITION AND/OR REMOVAL HEREON. DAMAGED UTILITY OR STRUCTURE SHALL BE REPAIRED TO THE SATISFACTION OF THEIR RESPECTIVE OWNERS.
- ANY INTENDED REVISION OF THE HORIZONTAL AND/OR VERTICAL LOCATION OF IMPROVEMENTS TO BE CONSTRUCTED AS SHOWN HEREON SHALL BE REVIEWED AND APPROVED BY ENGINEER PRIOR TO IMPLEMENTATION.
- CONTRACTOR SHALL NOTIFY ENGINEER UPON COMMENCEMENT OF CONSTRUCTION IN ORDER TO ENSURE THAT REQUIRED INSPECTIONS ARE PERFORMED IN A TIMELY AND EFFICIENT MANNER.
- CONTRACTOR SHALL PROMPTLY NOTIFY ENGINEER UPON DISCOVERY OF ANY UNFORESEEN SURFACE OR SUBSURFACE CONDITIONS THAT MAY IMPACT SITE CONSTRUCTION.
- FINISH RIM ELEVATIONS SHOULD MATCH PAVEMENT, GRADING OR LANDSCAPING, UNLESS SPECIFICALLY INDICATED OTHERWISE.
- WHERE EXISTING UTILITY LINES/STRUCTURES ARE TO BE CUT/BROKEN DOWN/ABANDONED, LINES/STRUCTURES SHALL BE PLUGGED/CAPPED/FILLED IN ACCORDANCE WITH UTILITY OWNER REQUIREMENTS.
- EROSION CONTROL MEASURES, SUCH AS SILT FENCE OR STRAW BALES AS MAY BE SHOWN HEREON, SHALL BE INSTALLED BEFORE EARTH DISTURBANCE OCCURS WITHIN BUFFER ZONE, AND SHALL SERVE AS THE LIMIT OF WORK.
- WHERE THE WORD "INSTALL" IS USED HEREIN, IT IS INTENDED TO DIRECT CONTRACTOR TO "FURNISH, INSTALL, AND PLACE IN OPERATION" THE COMPONENT REFERRED TO.
- LIMITS OF WORK SHALL BE STAKED IN THE FIELD PRIOR TO COMMENCEMENT OF CONSTRUCTION.
- ALL STORM DRAIN PIPE TO BE SMOOTH INTERIOR HDPE PIPE, 2.0 PSI GASKETED JOINT, UNLESS OTHERWISE NOTED.
- WHERE SHOWN, CONSTRUCTION NOTES ARE INTENDED TO SUMMARIZE AND CLARIFY MAJOR ITEMS OF WORK. THESE NOTES SHOULD NOT BE CONSTRUCTIVE LISTING OF ALL WORK REQUIRED. CONTRACTOR SHOULD CONTACT ENGINEER WHEN FURTHER CLARIFICATION OF DEPICTED WORK IS DESIRED.
- CONSTRUCTION OF FIRE AND DOMESTIC WATER SUPPLY IMPROVEMENTS SHALL CONFORM TO TOWN OF LITTLETON REQUIREMENTS.
- WHERE DIMENSIONS INVOLVE CURBS, DIMENSIONS ARE TO FACE OF CURB. WHERE SLOPED GRANITE CURB OR CAPE COD BERM SPECIFIED, FACE OF CURB IS EDGE OF FINISH PAVEMENT AT 10E OF CURB.
- NO DEBRIS, JUNK, RUBBISH OR OTHER NON-BIODEGRADABLE MATERIALS, FILL CONTAINING HAZARDOUS MATERIALS OR WASTES, OR STUMPS SHALL BE BURIED ON ANY LAND ON THIS SITE, OR LEFT ON ANY LOT OR ON THE STREET RIGHT OF WAY.

REGULATORY NOTES

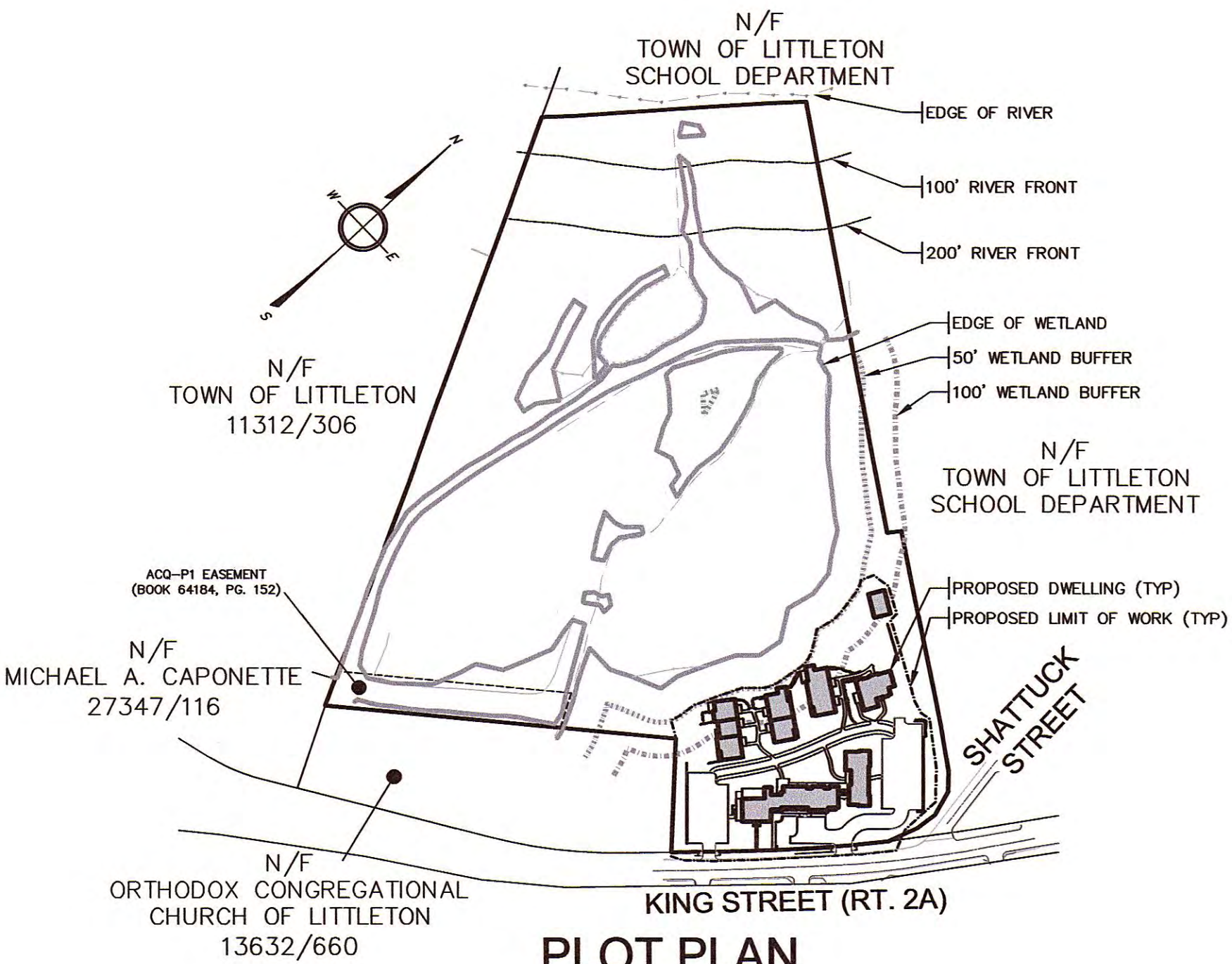
- CONTRACTOR SHALL CONTACT DIG-SAFE FOR UNDERGROUND UTILITY MARKING AT 888.344.7233 AT LEAST 72 HOURS PRIOR TO COMMENCEMENT OF ANY WORK. CONTRACTOR SHALL GIVE TWENTY-FOUR (24)-HOUR NOTICE TO PERTINENT TOWN DEPARTMENTS BEFORE COMMENCING ANY WORK IN THE FIELD.
- CONTRACTOR SHALL COORDINATE AND OBTAIN ALL CONSTRUCTION PERMITS REQUIRED BY REGULATORY AUTHORITIES.
- CONTRACTOR SHALL BE AWARE OF ALL CONSTRUCTION REQUIREMENTS, CONDITIONS, AND LIMITATIONS IMPOSED BY PERMITS AND APPROVALS ISSUED BY REGULATORY AUTHORITIES PRIOR TO COMMENCEMENT OF ANY WORK.
- ALL WORK OUTSIDE OF BUILDING THAT IS LESS THAN 10 FEET FROM THE INSIDE FACE OF BUILDING FOUNDATION SHALL CONFORM WITH THE UNIFORM STATE PLUMBING CODE OF MASSACHUSETTS, 248 CMR 2.00.
- GENERAL COMPLIANCE WITH 28 CFR PART 36 - 2010 ADA STANDARDS FOR ACCESSIBLE DESIGN AND 521 CMR PART C, EXTERIOR OF THE MASSACHUSETTS ARCHITECTURAL ACCESS BOARD REGULATIONS IS INTENDED. CONTRACTOR SHALL VERIFY COMPLIANCE DURING CONSTRUCTION AND SHALL NOTIFY THE OWNER OF ANY NON-COMPLIANCE ISSUES AS SOON AS DISCOVERED.

SENIOR RESIDENTIAL DEVELOPMENT
HAGER HOMESTEAD
LITTLETON, MA



VICINITY MAP

SCALE: 1" = 600'



PLOT PLAN

SCALE: 1" = 200'

SHEET INDEX

CIVIL DRAWINGS

- C1.1 TITLE SHEET
- C2.1 EXISTING CONDITIONS PLAN
- C2.2 DEMOLITION AND EROSION & SEDIMENT CONTROL PLAN
- C2.3 EROSION AND SEDIMENT CONTROL DETAILS
- C3.1 SITE LAYOUT AND UTILITIES PLAN
- C3.2 SITE LAYOUT AND ACCESS PLAN
- C4.1 GRADING, DRAINAGE AND PAVING PLAN
- C5.1 CONSTRUCTION DETAILS
- C5.2 CONSTRUCTION DETAILS
- C5.3 CONSTRUCTION DETAILS

LANDSCAPE DRAWINGS

BY: COPLEY WOLFF DESIGN GROUP

L300 PLANTING AND LIGHTING PLAN

ARCHITECTURAL DRAWINGS (REVISED 06/24/20*)

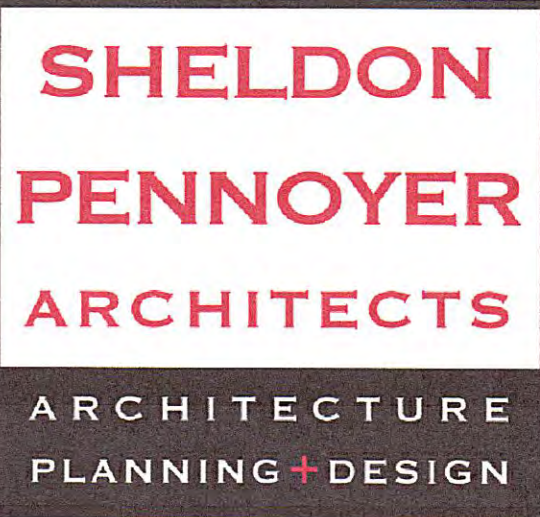
BY: SHELDON PENNOYER ARCHITECTS

- A0.1 RENDERED SITE EXTERIOR ELEVATIONS
 - A1.1 CH BASEMENT-MS GARDEN LEVEL FLOOR PLAN*
 - A1.2 CH MAIN-MS FIRST LEVEL FLOOR PLAN*
 - A1.3 CH SECOND-MS SECOND LEVEL FLOOR PLAN*
 - A1.4 CH THIRD-MS ROOF PLAN*
 - A1.5 C1, C2, C3 FLOOR PLANS
 - A1.6 RU PLANS
 - A1.7 SITE ROOF PLAN W/ MECHANICAL AREAS
 - A1.8 EXTERIOR BUILDING LIGHTING
 - A2.1 CH-MS EXTERIOR ELEVATIONS & COMMUNITY SIGN*
 - A2.2 CH-MS EXTERIOR ELEVATIONS*
 - A2.3 C1 & C2 EXTERIOR ELEVATIONS
 - A2.4 C3 EXTERIOR ELEVATIONS
 - A2.5 RU EXTERIOR ELEVATIONS
 - A3.1 CARPORT 1 PLANS & ELEVATIONS
 - A3.2 CARPORT 2 PLANS & ELEVATIONS
- * FOR REVISED MS BUILDING FOOTPRINT SEE SHEET A1.1

APPROVED BY THE
LITTLETON PLANNING BOARD

CHAIR
APPLICATION FILED
HEARING DATE
PLAN APPROVED

PROJECT TEAM:



64 NORTH MAIN STREET, SUITE 1, CONCORD, NH 03301



Copley Wolff Design Group
Landscape Architects & Planners

10 POST OFFICE SQUARE, SUITE 1315, BOSTON, MA 02109



110 PULPIT HILL ROAD AMHERST, MA 01002

DRAWING ISSUED FOR:

- ☐ CONCEPT ☐ CONSTRUCTION
- ☒ PERMIT ☐ CONSTRUCTION RECORD

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2	07/08/20	MCL	NMP	PEER REVIEW COMMENTS
1	06/23/20	MCL	NMP	PEER REVIEW COMMENTS
NO.	DATE	BY	APP.	REVISION DESCRIPTION



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SENIOR RESIDENTIAL DEVELOPMENT

TITLE SHEET

HAGER HOMESTEAD
336 KING STREET
LITTLETON, MA

PREPARED FOR:
MASSACHUSETTS COHOUSING, LLC.
200 SUMMIT DRIVE, SUITE 210
BURLINGTON, MA 01803

DES. BY: MCL/JLT
CHK. BY: NMP
DATE: APRIL 2020
JOB 191096
C1.1

N/F
TOWN OF LITTLETON
SCHOOL DEPARTMENT
MAP U19 -PARCEL 21

LEGEND

EXISTING	ELEVATION CONTOUR
	SPOT GRADE
	PROPERTY LINE
	WETLAND DELINEATION
	TREE LINE / EDGE OF VEGETATION
	EDGE OF PAVEMENT
	CAPE COD BERM CURBING
	GRANITE CURBING
	GRAVEL/DIRT ROAD
	STONE WALL
	WATER MAIN
	WATER SERVICE
	FIRE SERVICE
	WATER VALVE
	FIRE HYDRANT
	GAS LINE
	GAS SERVICE
	GAS VALVE
	BURIED POWER LINE
	OVERHEAD POWER LINE
	UTILITY POLE
	GUY WIRE
	ELECTRIC BOX
	CATCH BASIN
	DRAIN MANHOLE
	SIGN
	STONE BOUND
	DRILL HOLE
	IRON ROD

ABBREVIATIONS

EL	ELEVATION	HDPE	HIGH DENSITY POLYETHYLENE
INV	INVERT	PVC	POLYVINYL CHLORIDE
SF	SQUARE FEET	RCP	REINFORCED CONCRETE PIPE
AC	ACRES	N/F	NOW OR FORMERLY
FT	FEET	VP	VERNAL POOL
R	RADIUS	WF	WETLAND FLAG
BIT	BITUMINOUS	TW	TOP OF WALL
CONC	CONCRETE	BF	BOTTOM OF WALL
L	LENGTH	FG	FINISH GRADE
		BSMT	BASEMENT
		FF	FINISH FLOOR

ELEVATION DATUM

DATUM: NAVD 1988

B.M. NO.1

ASSESSORS REFERENCE:

ASSESSORS PARCEL MAP U19, PARCEL 38
RECORD OWNER: CRAIG C. GRUSKOWSKI & HEIDI PLATT GRUSKOWSKI
338 KING ST. LITTLETON, MA 01460

ASSESSORS PARCEL MAP U19, PARCEL 38-1
RECORD OWNER: CRAIG C. GRUSKOWSKI & HEIDI PLATT GRUSKOWSKI,
TRUSTEES OF PAINLESS REALTY TRUST
338 KING ST. LITTLETON, MA 01460

DEED REFERENCE:

- "THE PAINLESS REALTY TRUST" CRAIG C. GRUSKOWSKI & HEIDI PLATT GRUSKOWSKI, TRUSTEES. BOOK 43979 PAGE 197.
- CRAIG C. GRUSKOWSKI & HEIDI PLATT GRUSKOWSKI BOOK 56305 PAGE 245.
- CRAIG C. GRUSKOWSKI & HEIDI PLATT GRUSKOWSKI BOOK 56305 PAGE 247.
- CRAIG C. GRUSKOWSKI & HEIDI PLATT GRUSKOWSKI BOOK 29945 PAGE 603.

REFERENCES

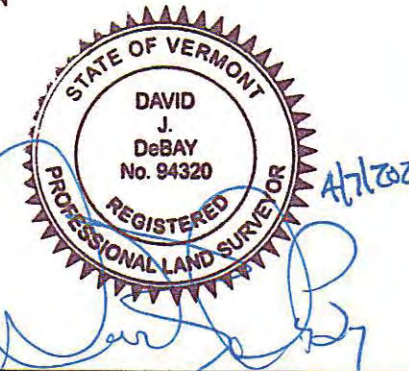
- PLAN RECORDED AS PLAN #1034 OF 1997, MIDDLESEX SOUTH REGISTRY OF DEEDS.
- PLAN RECORDED AS PLAN #34 OF 2011, MIDDLESEX SOUTH REGISTRY OF DEEDS.
- "ORDER OF RESOURCE AREA DELINEATION" PREPARED FOR MASSACHUSETTS COHOUSING, LLC. DATED MARCH 23, 2020. RECORDED AT THE MIDDLESEX SOUTH REGISTRY OF DEEDS BOOK 74331-PAGE 23.

NOTES:

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- DELINEATION OF EXISTING POND AND TRENCHES AREA SHOWN AS APPROXIMATE AND ARE BASED ON AERIAL IMAGES.

DRAWING ISSUED FOR:

- | | |
|--|--|
| ☐ CONCEPT | ☐ CONSTRUCTION |
| ☒ PERMIT | ☐ CONSTRUCTION RECORD |



NO.	DATE	BY	APP.	REVISION DESCRIPTION
2	07/09/20	MCL	NMP	NO REVISIONS TO THIS SHEET
1	06/23/20	MCL	NMP	NO REVISIONS TO THIS SHEET

GPR Engineering Solutions
for Land & Structures

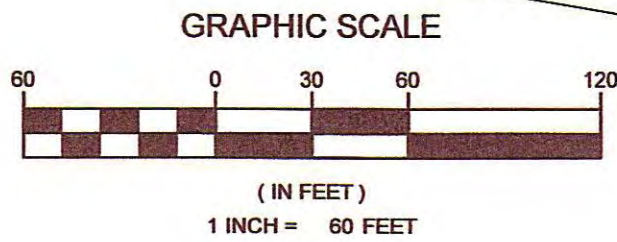
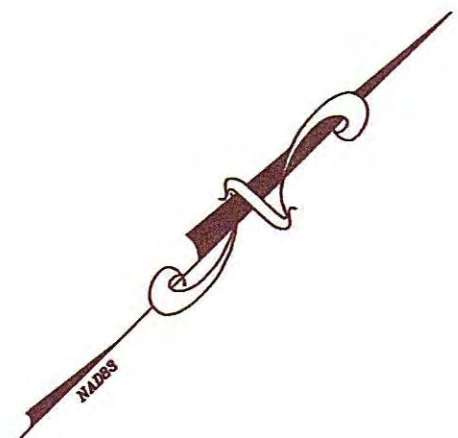
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SENIOR RESIDENTIAL DEVELOPMENT
EXISTING CONDITIONS PLAN

HAGER HOMESTEAD
336-338 KING STREET
LITTLETON, MA

PREPARED FOR:
MASSACHUSETTS COHOUSING, LLC.
200 SUMMIT DRIVE, SUITE 210
BURLINGTON, MA 01803

DRAFT: MCL	DATE: APRIL 2020	JOB 191096	C2.1
CHK. BY: DSB			



DEMOLITION NOTES

1. CONTRACTORS (IN ACCORDANCE WITH MASS. G.L. CHAPT. 82 SECT. 40 AS AMENDED) MUST CONTACT ALL UTILITY COMPANIES BEFORE EXCAVATING AND DRILLING. ALSO CALL "DIG-SAFE" AT 811 OR 1-888-344-7233.
2. EXISTING SEPTIC AND WATER SERVICES SHOWN HEREON ARE BASED ON AVAILABLE RECORD DATA FROM THE TOWN OF LITTLETON AND LAND OWNER RECORDS, RESPECTIVELY, AND ARE TO BE CONSIDERED APPROXIMATE. CONTRACTOR TO VERIFY HORIZONTAL AND VERTICAL LOCATION OF ALL UTILITIES PRIOR TO DEMOLITION.
3. PROPERLY DISPOSE OF NON-SALVAGEABLE MATERIAL/DEBRIS INCLUDING TREE STUMPS AND OTHER UNSUITABLE FILL MATERIAL OFF SITE.
4. CONTRACTOR SHALL TAKE MEASURES TO CONTROL DUST DURING EARTH REMOVAL AND CONTAIN DIRT ON SITE. STREET SWEEPING AND SWEEPING OF EXISTING PAVEMENT MAY BE REQUIRED DURING CONSTRUCTION.
5. COORDINATE WITH OWNER REGARDING DISPOSITION OF SALVAGEABLE MATERIALS.
6. WHERE EXISTING UTILITY LINES/STRUCTURES ARE TO BE CUT/BROKEN DOWN/ABANDONED, LINES/STRUCTURES SHALL BE PLUGGED/CAPPED/FILLED IN ACCORDANCE WITH UTILITY OWNER REQUIREMENTS.
7. ALL TREES AND LANDSCAPING SHOWN HEREON ARE INTENDED TO BE REMOVED, UNLESS OTHERWISE NOTED. SEE SHEET L300.
8. ALL EXISTING BITUMINOUS CONCRETE PAVEMENT AND CURBING ONSITE TO BE REMOVED.

LEGEND

EXISTING		PROPOSED
100	ELEVATION CONTOUR	100
X100.0	SPOT GRADE	100.0
---	PROPERTY LINE	---
---	WETLAND DELINEATION	---
---	WETLAND BUFFER ZONE	---
---	SHORELINE	---
---	100-YEAR FLOODPLAIN LIMIT	---
---	TREE LINE / EDGE OF VEGETATION	---
---	EDGE OF PAVEMENT	---
---	CAPE COD BERM CURBING	---
---	GRANITE CURBING	---
---	GRAVEL/DIRT ROAD	---
---	STOCKADE FENCE	---
---	STONE WALL	---
---	WATER MAIN	---
---	WATER SERVICE	---
---	FIRE SERVICE	---
---	WATER VALVE	---
---	FIRE HYDRANT	---
---	FORCE MAIN	---
---	GRAVITY SEWER LINE	---
---	SEWER MANHOLE	---
---	GAS LINE	---
---	GAS SERVICE	---
---	GAS VALVE	---
---	BURIED POWER LINE	---
---	OVERHEAD POWER LINE	---
---	UTILITY POLE	---
---	GUY WIRE	---
---	ELECTRIC BOX	---
---	STORM DRAIN	---
---	UNDERDRAIN	---
---	ROOF DRAIN	---
---	FOUNDATION DRAIN	---
---	CATCH BASIN	---
---	DRAIN MANHOLE	---
---	SILT FENCE BARRIER	---
---	STRAW WATTLES	---
---	DEEP SOIL OBSERVATION HOLE	---
---	SITE LUMINAIRE	---
---	SIGN	---
---	SURFACE RUNOFF DIRECTION	---
---	STONE BOUND	---
---	DRILL HOLE	---
---	IRON ROD	---

ABBREVIATIONS

EL	ELEVATION	HPC	HIGH DENSITY POLYETHYLENE
INV	INVERT	PVC	POLYVINYL CHLORIDE
SF	SQUARE FEET	RCP	REINFORCED CONCRETE PIPE
AC	ACRES	N/F	NOW OR FORMERLY
VP	VERTICAL POOL	VP	VERTICAL POOL
FF	FEET	WF	WETLAND FLAG
R	RADIUS	TW	TOP OF WALL
DIA	DIAMETER	BW	BOTTOM OF WALL
BIT	BITUMINOUS	FG	FINISH GRADE
CONC	CONCRETE	BSMT	BASEMENT
L	LENGTH	FF	FINISH FLOOR
S	SLOPE		

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GPR Engineering Solutions for Land & Structures

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DEMOLITION AND EROSION &
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LITTLETON, MA

PREPARED FOR:
MASSACHUSETTS COHOUSING, LLC.
200 SUMMIT DRIVE, SUITE 210
BURLINGTON, MA 01803

DES. BY: MCL/LT	DATE: APRIL 2020	JOB 191096	C2.2
CHK. BY: NMP			

EROSION AND SEDIMENT CONTROL REQUIREMENTS

PART 1 – GENERAL

1.01 SUMMARY

- A. FURNISH, INSTALL, AND MAINTAIN TEMPORARY AND PERMANENT EROSION AND SEDIMENT CONTROL MEASURES, SUCH AS, BUT NOT NECESSARILY LIMITED TO, STRAW BALE AND SILT FENCE BARRIERS, RIPRAP, DIVERSION CHANNELS AND BERMS, VEHICLE TRACKING PAD, EROSION CONTROL BLANKETS, INLET PROTECTION DEVICES, CHECK DAMS, STRATEGICALLY LOCATED AND PROTECTED STOCKPILES, SEDIMENT BASINS, MULCH, AND SEED MIX (HEREINAFTER "CONTROL MEASURES") ADEQUATE TO PREVENT THE CONVEYANCE OF SEDIMENT LADEN RUNOFF FROM SITE, OR INTO ENVIRONMENTALLY SENSITIVE AREAS, OR INTO AREAS WHERE WORK WILL BE ADVERSELY IMPACTED. ENVIRONMENTALLY SENSITIVE AREAS INCLUDE, BUT ARE NOT NECESSARILY LIMITED TO, WETLANDS, TRIBUTARIES TO WETLANDS, WETLAND BUFFER ZONES, INTERMITTENT AND PERENNIAL STREAMS / RIVERS, AND THEIR ATTENDANT BUFFER ZONES.
1. REFER TO DRAWINGS FOR LOCATION AND DETAILS OF CONTROL MEASURES REQUIRED TO COMMENCE WORK. THESE CONTROL MEASURES WILL BE ADEQUATE ONLY FOR VEGETATION CLEARING. THE DRAWINGS ARE NOT INTENDED TO GRAPHICALLY DEPICT ALL CONTROL MEASURES THAT WILL BE REQUIRED TO MEET THE REQUIREMENTS OF SECTION 1.01.A ABOVE.
2. DEVISE AND EMPLOY CONTROL MEASURES THROUGHOUT THE DURATION OF PROJECT, OVER ALL AREAS DISTURBED OR UNDISTURBED BY CONSTRUCTION, AS NECESSARY TO MEET THE REQUIREMENTS OF SECTION 1.01.A ABOVE.
3. DEVISE AND EMPLOY TEMPORARY CONTROL MEASURES AS NECESSARY TO MEET THE REQUIREMENTS DESCRIBED IN SECTION 1.01.A ABOVE, WHILE ALLOWING WORK TO PROCEED IN AN EFFICIENT, COST EFFECTIVE MANNER.
4. DEVISE, EMPLOY AND MAINTAIN CONTROL MEASURES UNTIL SUCH TIME AS THE ENTIRE SITE IS PERMANENTLY STABILIZED BY ESTABLISHED VEGETATION, FINISH LANDSCAPE MATERIALS, PAVED SURFACES, AND/OR ROOF AREA.
5. ONCE THE SITE IS PERMANENTLY STABILIZED AND CERTIFIED AS SUCH BY ENGINEER, REMOVE TEMPORARY CONTROL MEASURES WHILE PROTECTING STABILIZED SURFACES.

1.02 SUBMITTALS

- A. SUBMIT PRODUCT DATA, WARRANTY, AND TEST REPORTS FOR PRODUCTS AS INDICATED ON THE DRAWINGS.

1.03 QUALITY ASSURANCE

- A. COMPLY WITH GOVERNING CODES AND REGULATIONS. PROVIDE PRODUCTS FROM ACCEPTABLE MANUFACTURERS. USE EXPERIENCED INSTALLERS. DELIVER, HANDLE, AND STORE MATERIALS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
- B. CONFORM TO CONDITIONS OF APPROVAL ISSUED BY REGULATORY AGENCIES INCLUDING, BUT NOT NECESSARILY LIMITED TO, LOCAL PLANNING BOARD, CONSERVATION COMMISSION, BOARD OF SELECTMEN, BOARD OF HEALTH, PUBLIC WORKS / HIGHWAY DEPARTMENT, STATE ENVIRONMENTAL PROTECTION DEPARTMENT, AND U.S. GOVERNMENT ENVIRONMENTAL PROTECTION AGENCY. WHERE CONDITIONS AND REGULATORY APPROVAL DIFFER FROM REQUIREMENTS CONTAINED HEREIN OR ON THE DRAWINGS, COMPLY WITH THE MORE STRINGENT REQUIREMENT.

PART 2 – PRODUCTS

2.01 MATERIALS

- A. STRAW WATTLES: WEED AND SEED FREE DRY GRASS OR STRAW, MACHINE BOUND WITH JUTE OR WIRE, APPROXIMATE SIZE EACH BALE 42" X 16" X 16".
- B. PRE-FABRICATED SEDIMENT FENCE: WOVEN OR MONOFILAMENT GEOTEXTILE; UV-RESISTANT; POLYPROPYLENE OR POLYESTER; MINIMUM GRAB TENSILE OF 124 LBS; WATER PERMITIVITY BETWEEN 0.1 SEC⁻¹ AND 0.15 SEC⁻¹; SLURRY FLOW RATE OF 0.3 GAL/SF/MIN; MINIMUM 1"x1" HARDWOOD STAKES WITH INTEGRAL STAKE LOOPS AND STAPLED; APPROVED MANUFACTURERS: NILEX, PROPEX AND MIRAFI OR APPROVED EQUAL.
- C. MULCH: ORGANICS INCLUDING STRAW, PROCESSED PINE / HEMLOCK TWIGS, NEEDLES, AND STUMP GRINDING.
- D. SEED MIXES: PERENNIAL RYEGRASS, KENTUCKY BLUEGRASS, AND / OR FINE FESCUE, DISEASE RESISTANT. NON-MAINTAINED AREA OPTION - ANNUAL RYEGRASS COMBINED WITH MEDIUM RED CLOVER. CONFORM USE WITH ENGINEER.
- E. EROSION CONTROL BLANKETS: CURLED WOOD FIBER, AND FIBER ON PHOTODEGRADABLE EXTRUDED PLASTIC MATRIX, 80% OF FIBERS 6-INCHES LONG OR LONGER, WEIGHT 0.975 POUNDS / SY, CONTAINING NO CHEMICAL ADDITIVES, APPROVED MANUFACTURERS: NORTH AMERICAN GREEN, AND PROPEX OR APPROVED EQUAL.
- F. ROCK RIPRAP: SOUND, ANGULAR, 6-INCH MINUS PROCESSED ROCK, BLAST ROCK, OR TAILINGS.
- G. CRUSHED STONE: SOUND, ANGULAR, 2-INCH MINUS PROCESSED CRUSHED STONE

PART 3 – EXECUTION

3.01 THROUGHOUT CONSTRUCTION

- A. DEVISE WORK SEQUENCE SO AS TO LIMIT DRAINAGE AREA THAT IS TRIBUTARY TO DISTURBED AREAS. DEVISE, EMPLOY, AND MAINTAIN CONTROL MEASURES SUCH AS DIVERSION CHANNELS AND BERMS, STRATEGICALLY LOCATED STOCKPILES, AND SEDIMENT BASINS TO SUBDIVIDE DRAINAGE AREAS INTO SMALL, MANAGEABLE SUBAREAS, THEREBY MINIMIZING RUNOFF AND THE POTENTIAL FOR EROSION.
- B. MAINTAIN BARRIER AT LIMIT OF WORK AND PROTECT EXISTING VEGETATION / FACILITIES OUTSIDE OF LIMIT OF WORK.
- C. MAINTAIN SPARE MATERIAL STOCKPILES FOR IMMEDIATE EMPLOYMENT / REPAIR / EXPANSION OF CONTROL MEASURES. AT A MINIMUM, SUCH MATERIALS SHALL INCLUDE STRAW BALES, SILT FENCE AND STAKES, AND CRUSHED STONE.
- D. INSPECT AND MAINTAIN EFFECTIVENESS OF CONTROL MEASURES BY REPAIRING AS NECESSARY TO ENSURE INTENDED FUNCTION; BY SUPPLEMENTING AS NECESSARY FOR ADEQUATE EXTENT; BY REMOVING TRAPPED PRODUCTS OF EROSION AS NECESSARY TO MAINTAIN EFFECTIVE TRAP VOLUME.
- E. LIMIT EXTENT OF WORK AREA SO THAT ALL DISTURBED AREAS CAN BE STABILIZED WITH CONTROL MEASURES WITHIN A 24-HOUR PERIOD.
- F. INSTALL CONTROL MEASURES AS SOON AS PRACTICABLE AFTER EACH MANAGEABLE PORTION OF EARTHWORK IS COMPLETE. EMPLOY TEMPORARY MEASURES AS NECESSARY TO STABILIZE DISTURBED AREAS, EVEN WHERE SUBSEQUENT CONSTRUCTION OPERATIONS MAY REQUIRE RE-DISTURBANCE.
- G. WHEN INTENSE RAINFALL IS EXPECTED, CONSIDER, DEVISE, AND EMPLOY REINFORCING CONTROL MEASURES PRIOR TO THE RAINFALL EVENT TO MEET THE REQUIREMENTS DESCRIBED IN SECTION 1.01.A ABOVE. IF NECESSARY, EMPLOY TEMPORARY CONTROL MEASURES ON MATERIAL STOCKPILES TO COUNTERACT POTENTIAL SEDIMENT TRANSPORT DURING INTENSE RAINFALL.
- H. WHEN VEHICLE REFUELING IS REQUIRED ON SITE, CONDUCT REFUELING OPERATIONS OUTSIDE OF ENVIRONMENTALLY SENSITIVE AREAS AND WITHIN AN AREA THAT IS CONTAINED BY A BEST MANAGEMENT PRACTICE. A PORTABLE SPILL KIT SHALL BE KEPT ONSITE AT ALL TIMES.
- I. PROPERLY DISPOSE OF DEBRIS, SOLID WASTE, TRASH, AND CONSTRUCTION WASTE / BYPRODUCTS OFF SITE. KEEP TRASH BINS/DUMPSTERS COVERED AT ALL TIMES.
- J. SWEEP ON-SITE PAVED AREAS AND OFF-SITE STREETS AS NECESSARY TO PREVENT SILT AND DEBRIS ORIGINATING ON SITE FROM ENTERING CLOSED DRAINAGE SYSTEMS AND / OR ENVIRONMENTALLY SENSITIVE AREAS.

3.02 SITE PREPARATION AND ACCESS

- A. WALK SITE AND IDENTIFY LOCATIONS OF LIMIT OF WORK AND ENVIRONMENTALLY SENSITIVE AREAS. ESTABLISH CONSTRUCTION STAGNG AREA, LOCATED BEYOND ENVIRONMENTALLY SENSITIVE AREAS.
- B. INSTALL CONTROL MEASURES AS SHOWN ON THE DRAWINGS, INCLUDING THOSE DEFINING THE LIMIT OF WORK.
- C. LIMIT VEHICULAR TRAFFIC TO AND FROM SITE TO MINIMIZE TRANSPORT OF SEDIMENTATION.

3.03 CLEARING, GRUBBING, AND STRIPPING

- A. SCHEDULE GRUBBING AND STRIPPING TO OCCUR IMMEDIATELY PRIOR TO EARTH DISTURBANCE, DEPENDING ON SITE AREA, CONSIDER MULTIPLE GRUBBING PHASES, SEQUENCED TO TAKE ADVANTAGE OF THE EROSION PREVENTION POTENTIAL OF EXISTING VEGETATIVE COVER.
- B. MINIMIZE THE AREA OF EXISTING VEGETATION REMOVED WHEREVER POSSIBLE.
- C. LOCATE AND SIZE STOCKPILES TO MINIMIZE EROSION POTENTIAL, TAKING ADVANTAGE OF TERRAIN SLOPE AND ASPECT, WHERE APPROPRIATE.

- D. PROTECT VEGETATION, INCLUDING ROOT SYSTEMS, BEYOND LIMIT OF CLEARING.
- E. PROCESS TIMBER, STUMPS, SLASH, AND BRUSH SO AS TO PROTECT ENVIRONMENTALLY SENSITIVE AREAS AND INSTALLED CONTROL MEASURES. PROPERLY DISPOSE OF EXCESS OFF SITE. BURIAL OF STUMPS ON SITE IS PROHIBITED.

3.04 EXCAVATION FOR BUILDING FOUNDATIONS AND UTILITIES

- A. DEVISE AND INSTALL CONTROL MEASURES ADEQUATE TO HANDLE DISCHARGES AND TRAP SEDIMENT FROM FOOTING SUMP AND WELL POINT PUMPS PRIOR TO EXCAVATION.
- B. ARMOR SUMP PUMP DISCHARGE LOCATIONS TO PREVENT EROSION AT POINT OF DISCHARGE AND AREAS DOWNSTREAM.
- C. IF FOUNDATION EXCAVATIONS GRADE TO DAYLIGHT ON THE LOW SIDE, DEVISE AND INSTALL CONTROL MEASURES TO HANDLE SURFACE AND GROUNDWATER FLOW FROM EXCAVATION LOW POINT.
- D. STOCKPILE EXCAVATED MATERIALS TO BAFFLE OVERLAND RUNOFF, AVOIDING THE CREATION OF LENGTHY PATHS OF CONCENTRATED RUNOFF.
- E. BACKFILL UTILITY TRENCHES AS SOON AS PRACTICABLE TO PREVENT FLOODING, SLOUGHING, POTENTIAL OVERFLOW, AND REPETITIVE EARTH DISTURBANCE.
- F. ROOTS SHALL BE CUT CLEANLY RATHER THAN PULLED OR RIPPED OUT DURING UTILITY TRENCHING.

3.05 SITE GRADING

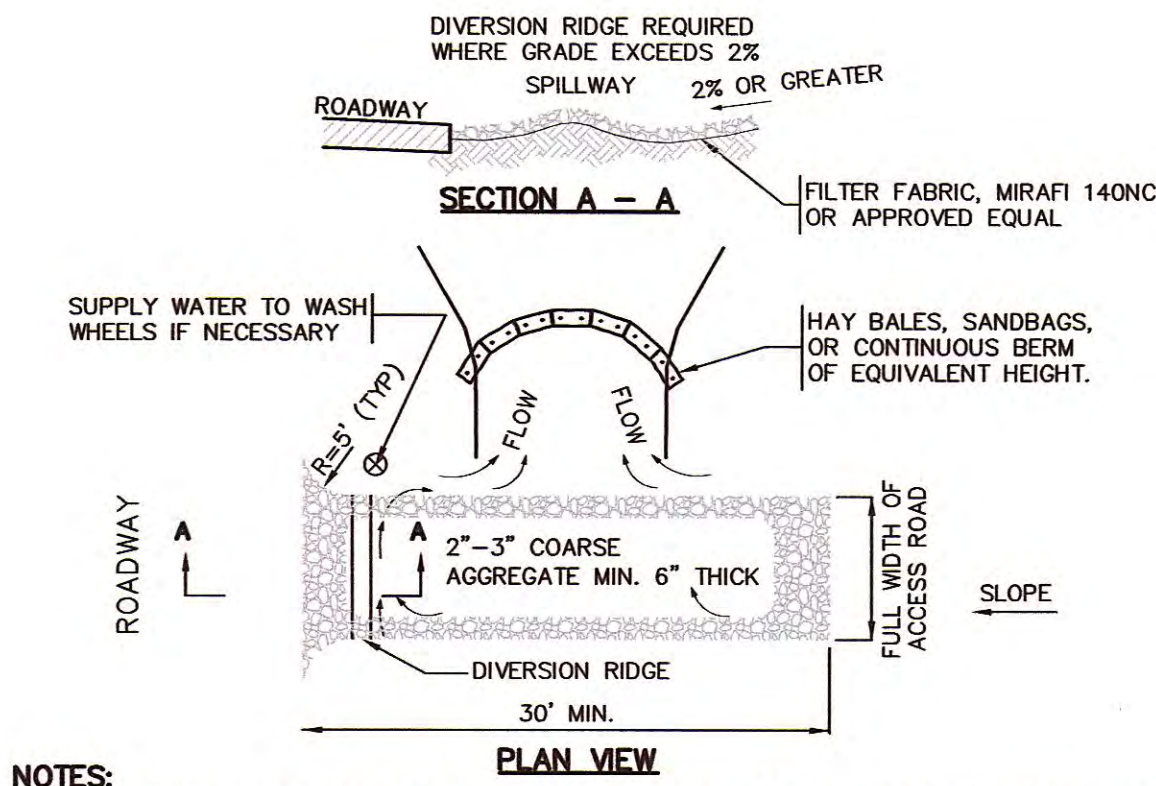
- A. WHERE APPLICABLE, FOLLOW EXCAVATION AND FILL PRACTICES SHOWN ON DRAWINGS TO LOCALIZE AND MINIMIZE SEDIMENT TRANSPORT.
- B. MONITOR SEDIMENTATION VOLUME IN TEMPORARY SEDIMENT BASINS AND AT DIVERSION BERMS AND CHECK DAMS. IN ALL AREAS EXCEPT THOSE THAT DO NOT PRESENT POTENTIAL PROBLEMS WITH REGARD TO FUTURE SOIL STABILITY, DRAINAGE, OR BEARING CAPACITY, REMOVE AND PROPERLY DISPOSE OF TRAPPED SEDIMENTATION BEFORE BRINGING SITE TO FINAL SUBGRADE.
- C. IF SEDIMENTATION IS DISPOSED ONSITE, IT SHALL BE DEPOSITED IN AREAS WHERE RUNOFF CANNOT RE-TRANSPORT DOWNSTREAM.

3.06 STORMWATER MANAGEMENT SYSTEM

- A. THE STORMWATER MANAGEMENT SYSTEM INCLUDES, BUT IS NOT NECESSARILY LIMITED TO, ALL PERMANENT DETENTION / RETENTION BASINS, DISCHARGE STRUCTURES / WEIRS, CULVERTS, OPEN CHANNELS, CURBS, GUTTERS, PAVED SWALES, CATCH BASINS, DRAIN MANHOLES, DRAINAGE PIPES, ROOF DRAIN MANIFOLDS, WATER QUALITY SWALES, SEPARATORS, AND SIMILAR STORMWATER RUNOFF CONVEYANCE, TREATMENT, AND STORAGE FACILITIES.
- B. INSTALL STORMWATER MANAGEMENT SYSTEM COMPONENTS STARTING AT THE DOWNSTREAM END AND PROCEED UPSTREAM. WHERE POSSIBLE, COMPLETE INSTALLATION OF PERMANENT DETENTION / RETENTION BASINS PRIOR TO BEGINNING WORK ON UPSTREAM SYSTEM COMPONENTS.
- C. INSTALL CONTROL MEASURES AT FINISHED UPSTREAM AND DOWNSTREAM PIPE ENDS AS SOON AS POSSIBLE AFTER COMPLETION OF PIPE RUN. SUCH MEASURES INCLUDE, BUT ARE NOT NECESSARILY LIMITED TO, RIPRAP, CHECK DAMS, STRAW BALE / SILT FENCE BARRIERS, AND VELOCITY DISSIPATORS.
- D. AT THE END OF EACH DAY OR WHEN RAINFALL IS EXPECTED, PLUG UPSTREAM END OF PIPES / DAM OPEN CHANNELS OR OTHERWISE REDIRECT POTENTIAL RUNOFF AND PREVENT FLOW FROM ENTERING PARTIALLY COMPLETED SYSTEM / SYSTEM COMPONENTS.
- E. WHERE PORTIONS OF A NEW SYSTEM ARE TO BE ACTIVATED PRIOR TO COMPLETION OF THE ENTIRE SYSTEM, EMPLOY CONTROL MEASURES TO PREVENT SEDIMENT RUNOFF AND DEBRIS FROM ENTERING THE SYSTEM. EMPLOY SILT SACKS OR FABRIC ON CATCH BASIN INLETS, AND PIPE AND CULVERT OPENINGS. EMPLOY CHECK DAMS AND TEMPORARY SEDIMENT BASINS UPSTREAM OF AND ALONG OPEN CHANNELS, SWALES, AND DITCHES TO TRAP SEDIMENT UPGRADIENT OF ENVIRONMENTALLY SENSITIVE AREAS.
- F. REMOVE TRAPPED SEDIMENTATION AND DEBRIS FROM ALL SYSTEM COMPONENTS AFTER COMPLETION OF INSTALLATION, AND AGAIN AFTER THE ENTIRE SITE IS PERMANENTLY STABILIZED BY ESTABLISHED VEGETATION, FINISH LANDSCAPE MATERIALS, PAVED SURFACES, AND/OR ROOF AREA. REMOVE TRAPPED SEDIMENTATION AND DEBRIS FROM DETENTION / RETENTION BASIN BOTTOMS SO THAT FINISH BOTTOM MATERIALS / INFILTRATION FUNCTION CONFORM TO DESIGN.

3.07 LANDSCAPING

- A. COMPLETE LANDSCAPING AS SOON AS POSSIBLE AFTER COMPLETION OF FINAL SUBGRADE.
- B. IMMEDIATELY AFTER PLACEMENT OF TOPSOIL, STABILIZE WITH CONTROL MEASURES INCLUDING, BUT NOT NECESSARILY LIMITED TO, SEED MIX, MULCH, AND / OR BLANKET.



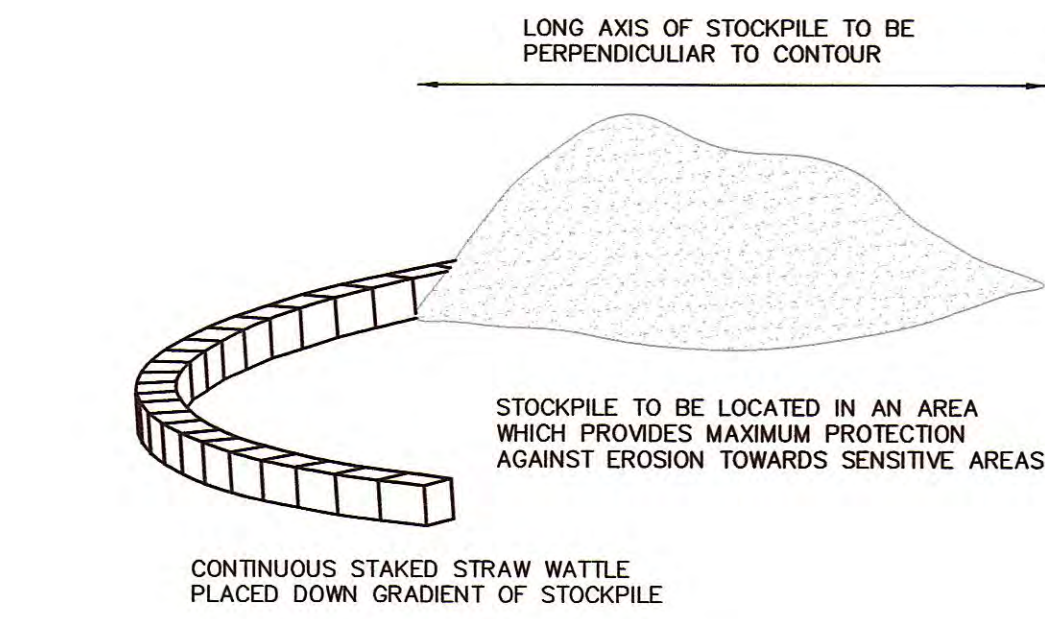
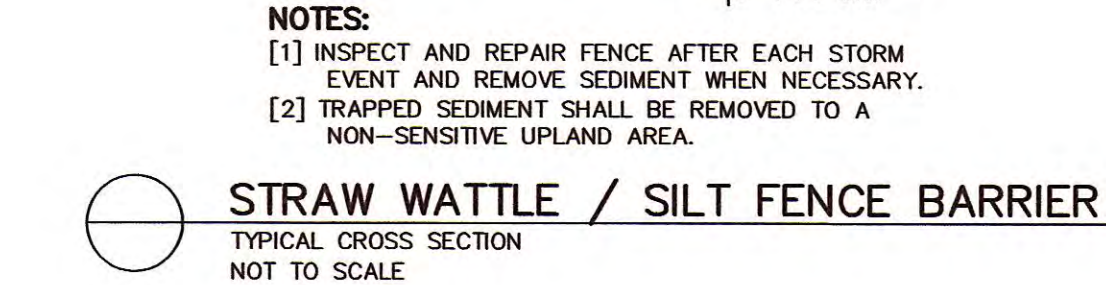
CONSTRUCTION ENTRANCE

- [1] THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHT-OF-WAYS. THIS MAY REQUIRE TOP DRESSING, REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT.
- [2] WHEN NECESSARY, WHEELS SHALL BE CLEANED PRIOR TO ENTRANCE ONTO PUBLIC RIGHT-OF-WAY.
- [3] WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN.
- [4] USE SANDBAGS, HAY BALES OR OTHER APPROVED METHODS TO CHANNELIZE RUNOFF TO BASIN AS REQUIRED.

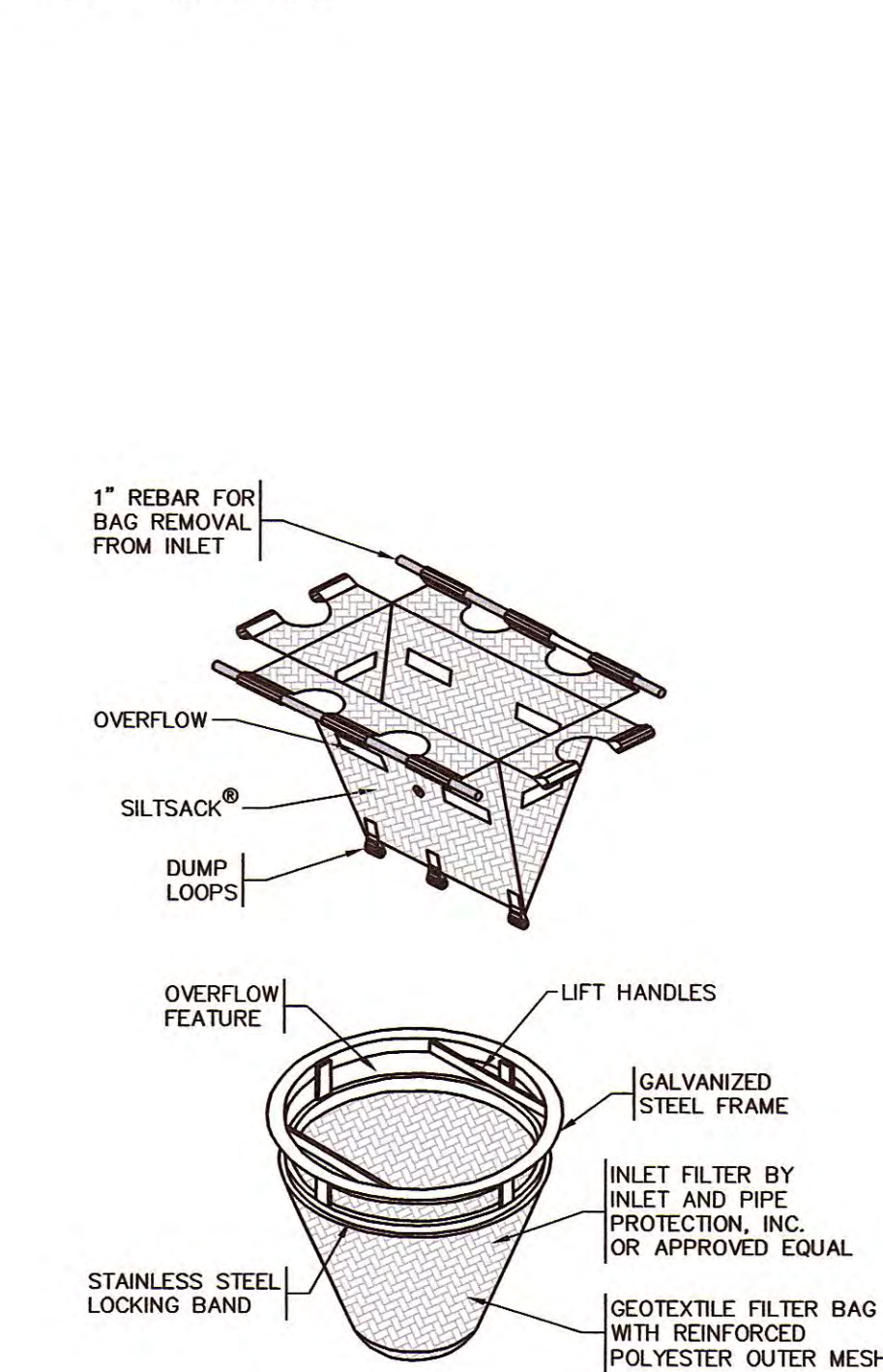
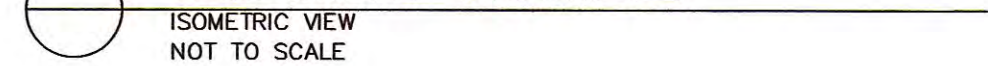


STRAW WATTLE / SILT FENCE BARRIER

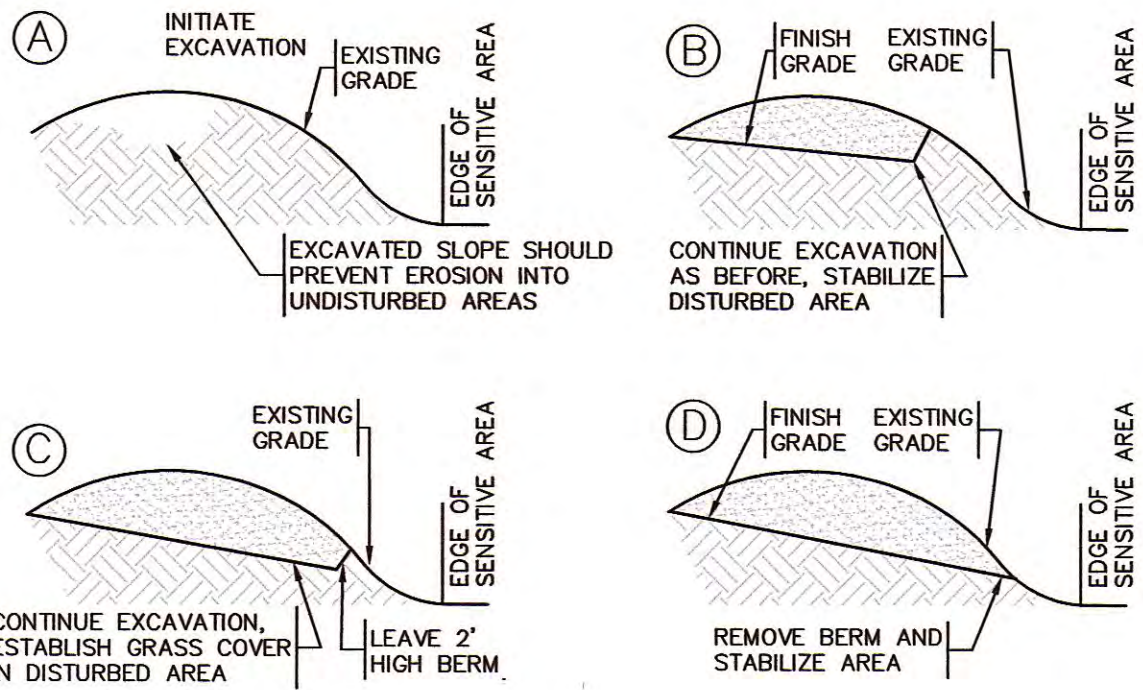
- [1] INSPECT AND REPAIR FENCE AFTER EACH STORM EVENT AND REMOVE SEDIMENT WHEN NECESSARY.
- [2] TRAPPED SEDIMENT SHALL BE REMOVED TO A NON-SENSITIVE UPLAND AREA.



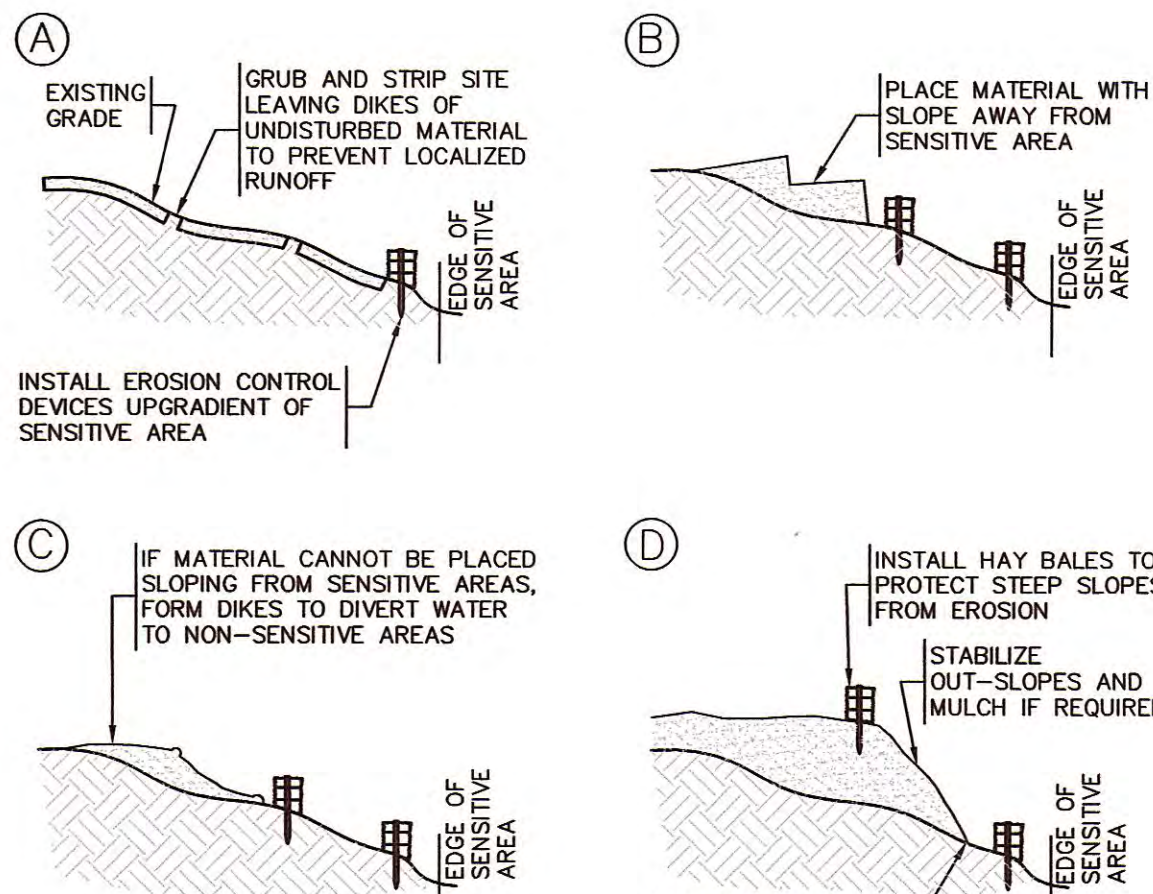
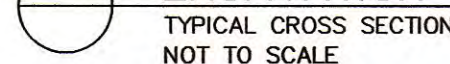
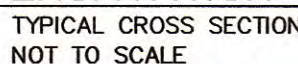
TEMPORARY STOCKPILE



- [1] CLEAN INLET PROTECTION WHEN 30% FULL
- [2] BURLAP IS NOT AN ACCEPTABLE GEOTEXTILE



EXCAVATION PROCEDURE



FILL PROCEDURE



DRAWING ISSUED FOR:

- ☐ CONCEPT ☐ CONSTRUCTION
- ☒ PERMIT ☐ CONSTRUCTION RECORD

THIS DRAWING MAY NOT SHOW CONSTRUCTION DETAILS AND SPECIFICATIONS FOR ALL PROPOSED IMPROVEMENTS, AND MAY NOT IDENTIFY ALL CONSTRUCTION WORK ITEMS/AREAS OF CONTRACTOR JURISDICTION.

PER 250 CMR 5.03(13), THE FOLLOWING ARE EXCLUDED FROM THE PROFESSIONAL ENGINEER'S RESPONSIBILITY: ALL BOUNDARY INFORMATION; LOCATION OF EXISTING STRUCTURES, TREES, UTILITIES, TOPOGRAPHY OR SIMILAR FEATURES; DESIGN OF RETAINING WALLS, PROPRIETARY EQUIPMENT. SEE EXISTING CONDITION NOTES.

NO.	DATE	BY	APP.	REVISION DESCRIPTION
2	07/08/20	MCL	NMP	PEER REVIEW COMMENTS
1	06/23/20	MCL	NMP	PEER REVIEW COMMENTS

GPR Engineering Solutions for Land & Structures

GOLDSMITH, PREST & RINGWALL, INC.
39 MAIN STREET, SUITE 301, AYER, MA 01432
CIVIL ENGINEERING • LAND SURVEYING • LAND PLANNING
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SPECIAL PERMIT
SENIOR RESIDENTIAL DEVELOPMENT

EROSION AND SEDIMENT
CONTROL DETAILS

HAGER HOMESTEAD
336 KING STREET
LITTLETON, MA

PREPARED FOR:
MASSACHUSETTS COHOUSING, LLC.
200 SUMMIT DRIVE, SUITE 210
BURLINGTON, MA 01803

DES. BY: MCL/AT	DATE: APRIL 2020	JOB 191096
CHK. BY: NMP		

C2.3

Structure	FROM		TO		Pipe Size (in)	Pipe Type	Length (ft)	Slope (%)	
	Rim El.	Lowest Stab El.	Invert (out)	To					Invert (in)
BLDG. CH	—	237.00	235.08	GREASE TRAP	234.48	6	SDR 35	29.90	2.0%
GREASE TRAP	—	—	234.23	CO 1	234.13	8	SDR 35	5.00	2.0%
BLDG. C1	—	237.00	234.97	CO 2	234.87	6	SDR 35	5.00	2.0%
CO 1	—	—	234.03	CO 3	234.00	8	SDR 35	6.88	2.0%
CO 2	—	—	234.87	CO 3	234.00	6	SDR 35	42.73	2.0%
CO 3	—	—	234.00	SMH 1	233.39	8	SDR 35	30.67	2.0%
BLDG. MS	—	241.00	236.37	CO 4	236.17	6	SDR 35	10.25	2.0%
CO 4	—	—	236.17	SMH 1	235.69/233.39**	6	SDR 35	28.37	2.0%
SMH 1	240.20	—	233.22	CO 6	231.76	8	SDR 35	72.93	2.0%
BLDG. C2	—	237.00	232.42	CO 5	232.32	6	SDR 35	5.00	2.0%
CO 5	—	—	232.32	CO 6	231.76	6	SDR 35	28.24	2.0%
CO 6	—	—	231.76	SMH 2	231.70	8	SDR 35	2.91	2.0%
SMH 2	239.30	—	231.54	CO 8	231.13	8	SDR 35	20.17	2.0%
BLDG. C3	—	237.50	231.42	CO 7	231.32	6	SDR 35	5.00	2.0%
CO 7	—	—	231.32	CO 8	231.13	6	SDR 35	9.39	2.0%
CO 8	—	—	231.13	SMH 3	230.76	8	SDR 35	18.31	2.0%
SMH 3	239.20	—	230.60	CO 10	229.90	8	SDR 35	34.51	2.0%
BLDG. RU	—	236.00	230.33	CO 9	230.23	6	SDR 35	5.00	2.0%
CO 9	—	—	230.23	CO 10	229.9	6	SDR 35	16.24	2.0%
CO 10	—	—	229.90	SMH 4	229.80	8	SDR 35	5.00	2.0%
SMH 4	242.50	—	229.63	SEPTIC TANK	229.06	8	SDR 35	28.42	2.0%

LEGEND

EXISTING

PROPOSED

EL	ELEVATION	HPE	HIGH DENSITY POLYETHYLENE
IN	INVERT	PVC	POLYVINYL CHLORIDE
AC	ACRES	R/C	REINFORCED CONCRETE PIPE
FT	FEET	N/F	NOW OR FORMERLY
R	RADIUS	VP	VERNAL POOL
DIA	DIAMETER	WF	WETLAND FLAG
BT	BITUMINOUS	TG	TOP OF WALL
CONC	CONCRETE	BW	BOTTOM OF WALL
L	LENGTH	FW	FINISH GRADE
S	SLOPE	BSMT	BASEMENT
F	FIRE	FF	FINISH FLOOR
		BS	BUILDING SEWER

☐ CONCEPT ☐ CONSTRUCTION
☒ PERMIT ☐ CONSTRUCTION
 RECORD

2	07/08/20	MCL	NMP	PEER REVIEW COMMENTS
1	06/23/20	MCL	NMP	PEER REVIEW COMMENTS
NO.	DATE	BY	APP.	REVISION DESCRIPTION

SPECIAL PERMIT
SENIOR RESIDENTIAL DEVELOPMENT
SITE LAYOUT AND UTILITIES PLAN

DES. BY: MCL/LT	DATE: APRIL 2020	JOB 191096	C3.1
CHK. BY: NMP			

N/F
ORTHODOX CONGREGATIONAL
CHURCH OF LITTLETON
13632/660

CAR PORT ROOF OVER HANG LIMIT
(TYP OF 2) [SEE SHEET A3.1]

INSTALL BITUMINOUS
CAPE COD BERM (TYP)

INSTALL TRASH ENCLOSURE
(TYP OF 2) [SEE SHEET A3.1]

INSTALL VERTICAL
GRANITE CURBING (TYP)

INSTALL TRANSFORMER
PAD (TYP OF 3)

INSTALL UNDERGROUND ELECTRIC, TELEPHONE,
AND CABLE SERVICES PER UTILITY OWNER'S
REQUIREMENTS (SIZE, MATERIAL, AND LENGTH
TO BE DETERMINED) (TYP)

CONNECT 4" DIA. CAST IRON WATER
SERVICE TO EXISTING MAIN

APPROXIMATE L
EXISTING 10" W

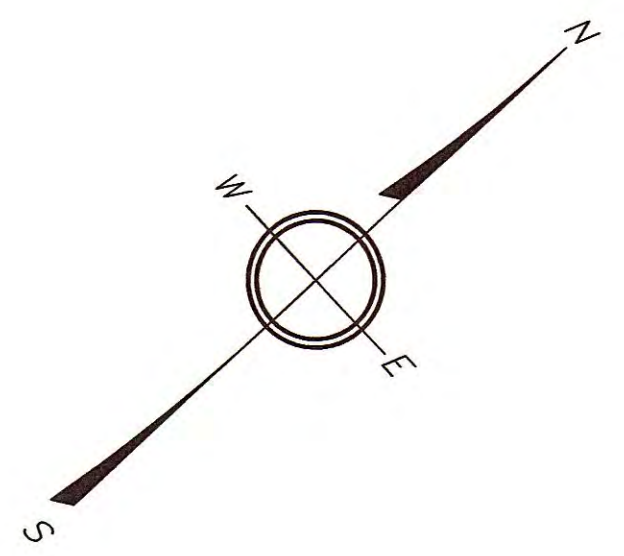
GRAPHIC SCALE

0 10 20 40
(IN FEET)
1 INCH = 20 FEET

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Hager Homestead - Rim & Invert Schedule of Drainage Structures

FROM	TO	Structure	Rim	Invert	Structure	Rim	Invert	Pipe Size (in)	Pipe Type	Length (ft)	Slope (ft/ft)	Comment
CB-1	IC	IC	239.50	235.50	DMH-1	236.00	233.50	12	HDPE	95.0	0.021	Infiltration Chambers overflow pipe
CB-3	DMH-2	DMH-2	244.40	240.14	DMH-1	237.30	233.00	12	HDPE	142.0	0.020	
DMH-2	CB-2	DMH-1	241.40	237.20	DMH-1	236.00	233.00	12	HDPE	60.0	0.020	
CB-2	DMH-1	DMH-1	239.20	236.20	DMH-1	236.00	233.00	12	HDPE	5.0	0.040	
DMH-1	CB-4	FES-1	239.50	235.90	FES-1	234.00	233.00	12	HDPE	30.0	0.063	FES-1 set at Water Quality Swale Double Grate
CB-4	DMH-4	DMH-4	240.00	236.00	DMH-4	234.50	232.50	12	HDPE	83.0	0.018	
DMH-4	DMH-3	DMH-3	243.00	234.40	DMH-3	232.50	232.00	12	HDPE	108.0	0.018	
DMH-3	OCS	FES-2	235.10	232.40	FES-2	232.00	230.00	12	HDPE	24.0	0.017	FES-2 set at Sediment Forebay
OCS	RD1	FES-2	232.17	230.50	FES-2	230.00	228.00	10	HDPE	20.0	0.025	
RD1	RD2	12"HDPE	-	237.00	12"HDPE	234.82	234.82	6	HDPE	30.0	0.073	Wye into 12"HDPE (CB-1 to DMH-1)
RD2	RD3	12"HDPE	-	237.00	12"HDPE	235.42	235.42	6	HDPE	12.0	0.132	Wye into 12"HDPE (CB-1 to DMH-1)
RD3	RD4	IC	-	237.50	IC	236.75	236.75	8	HDPE	20.0	0.038	Roof drain into Infiltration Chambers
RD4	RD5	6"HDPE	-	244.00	6"HDPE	243.50	243.50	6	HDPE	7.0	0.071	Wye into 6"HDPE (RD5 to IC)
RD5	RD6	IC	-	244.00	IC	236.75	236.75	6	HDPE	185.0	0.039	Roof drain into Infiltration Chambers
RD6	RD7	FES-4	-	231.00	FES-4	230.00	230.00	6	HDPE	31.0	0.032	FES-4 set at Infiltration Basin
RD7	RD8	FES-5	-	232.00	FES-5	231.00	231.00	6	HDPE	27.0	0.037	FES-5 set at Infiltration Basin
RD8		DMH-3	-	234.00	DMH-3	232.50	232.50	6	HDPE	38.0	0.039	



LEGEND

EXISTING	PROPOSED
100- 1000	ELEVATION CONTOUR
100- 1000	SPOT GRADE
100- 1000	PROPERTY LINE
100- 1000	WETLAND DELINEATION
100- 1000	WETLAND BUFFER ZONE
100- 1000	SHORELINE
100- 1000	100-YEAR FLOODPLAIN LIMIT
100- 1000	TREE LINE / EDGE OF VEGETATION
100- 1000	EDGE OF PAVEMENT
100- 1000	CAPE COD BERM CURBING
100- 1000	GRANITE CURBING
100- 1000	GRAVEL/DIRT ROAD
100- 1000	STOCKADE FENCE
100- 1000	STONE WALL
100- 1000	WATER MAIN
100- 1000	WATER SERVICE
100- 1000	FIRE SERVICE
100- 1000	WATER VALVE
100- 1000	FIRE HYDRANT
100- 1000	FORCE MAIN
100- 1000	GRAVITY SEWER LINE
100- 1000	SEWER MANHOLE
100- 1000	GAS LINE
100- 1000	GAS SERVICE
100- 1000	GAS VALVE
100- 1000	BURIED POWER LINE
100- 1000	OVERHEAD POWER LINE
100- 1000	UTILITY POLE
100- 1000	GUY WIRE
100- 1000	ELECTRIC BOX
100- 1000	STORM DRAIN
100- 1000	UNDERDRAIN
100- 1000	ROOF DRAIN
100- 1000	FOUNDATION DRAIN
100- 1000	CATCH BASIN
100- 1000	DRAIN MANHOLE
100- 1000	SILT FENCE BARRIER
100- 1000	STRAW WATTLES
100- 1000	DEEP SOIL OBSERVATION HOLE
100- 1000	SITE LUMINAIRE
100- 1000	SIGN
100- 1000	SURFACE RUNOFF DIRECTION
100- 1000	STONE BOUND
100- 1000	DRILL HOLE
100- 1000	IRON ROD

ABBREVIATIONS

EL	ELEVATION	HDPE	HIGH DENSITY POLYETHYLENE
INV	INVERT	PVC	POLYVINYL CHLORIDE
SF	SQUARE FEET	RCP	REINFORCED CONCRETE PIPE
AC	ACRES	N/F	NOW OR FORMERLY
FT	FEET	VP	VERNAL POOL
R	RADIUS	WF	WETLAND FLAG
DIA	DIAMETER	TW	TOP OF WALL
BIT	BITUMINOUS	BW	BOTTOM OF WALL
CONC	CONCRETE	FG	FINISH GRADE
L	LENGTH	BSMT	BASEMENT
S	SLOPE	FF	FINISH FLOOR
TC	TOP OF CURB	HP	HIGH POINT
BC	BOTTOM OF CURB	LP	LOW POINT

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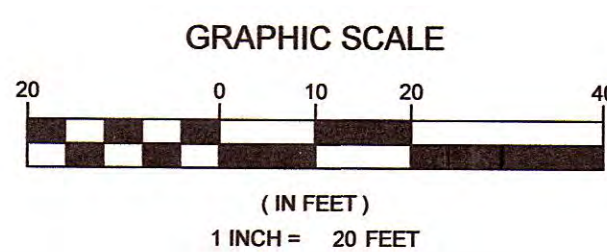
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GRADING, DRAINAGE AND
PAVING PLAN

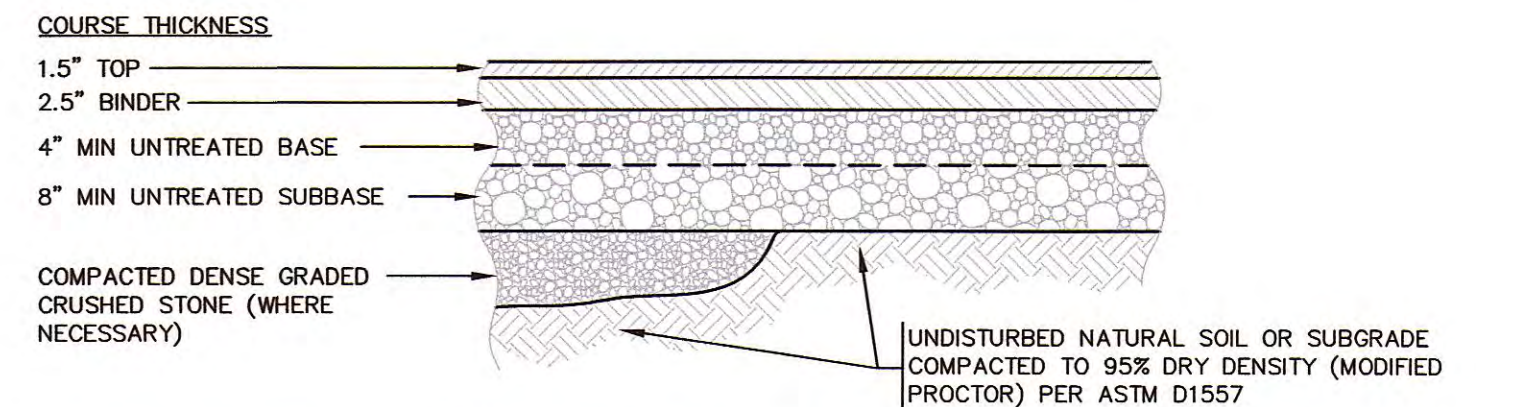
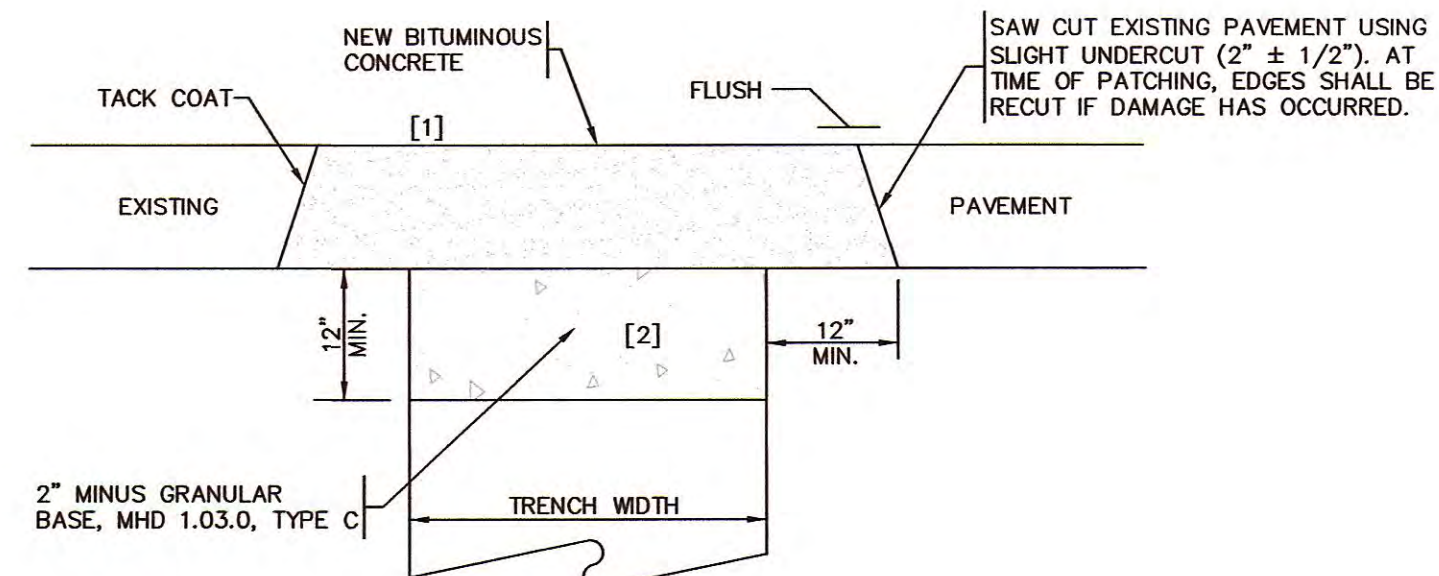
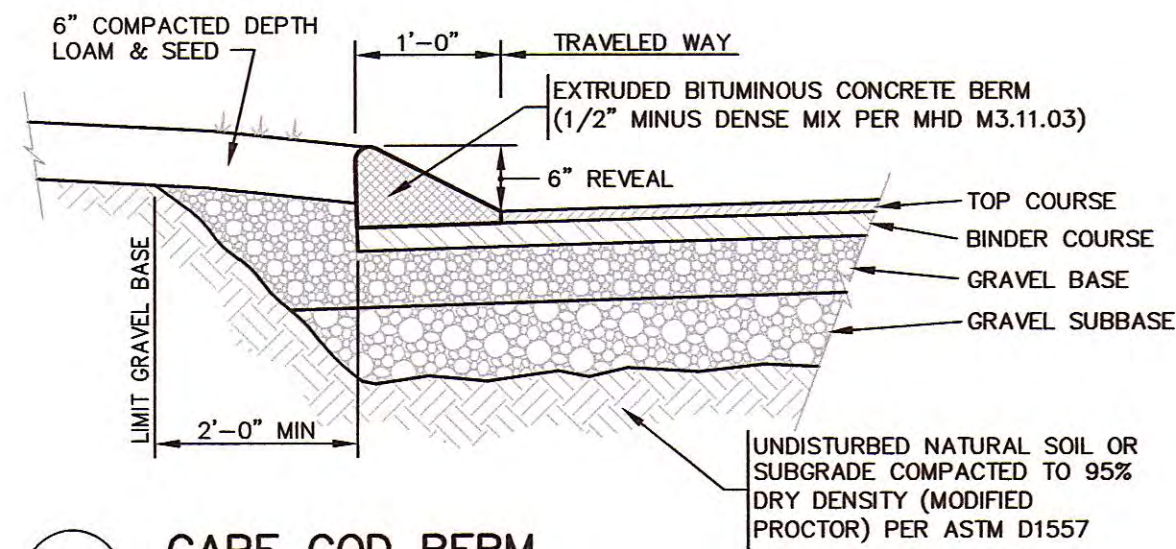
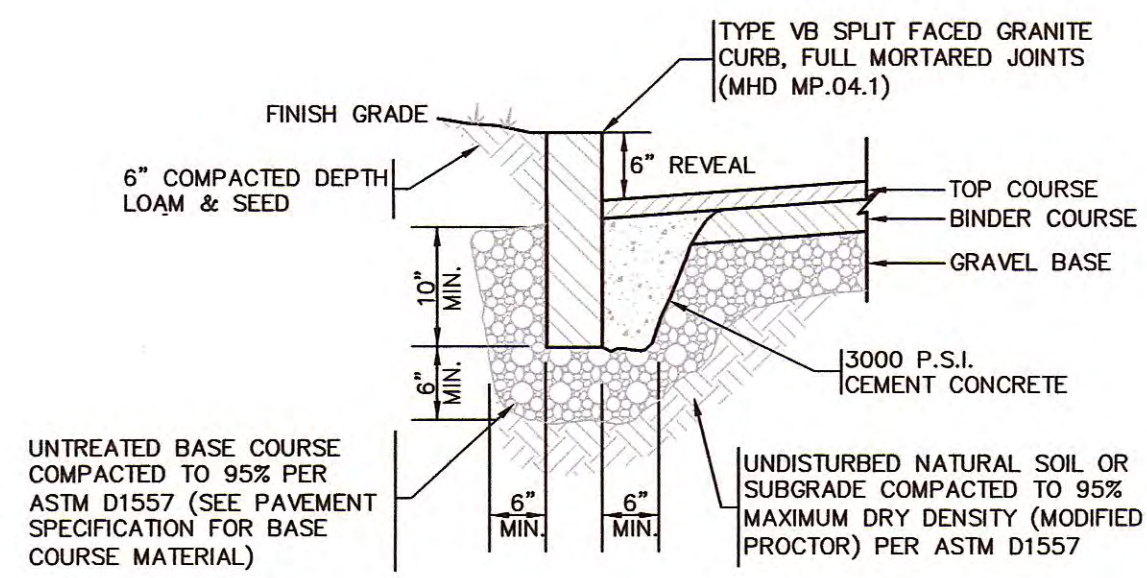
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336 KING STREET
LITTLETON, MA

PREPARED FOR:
MASSACHUSETTS COHOUSING, LLC.
200 SUMMIT DRIVE, SUITE 210
BURLINGTON, MA 01803

DES. BY: MCL/LT	DATE: APRIL 2020	JOB 191096	C4.1
CHK. BY: NMP			



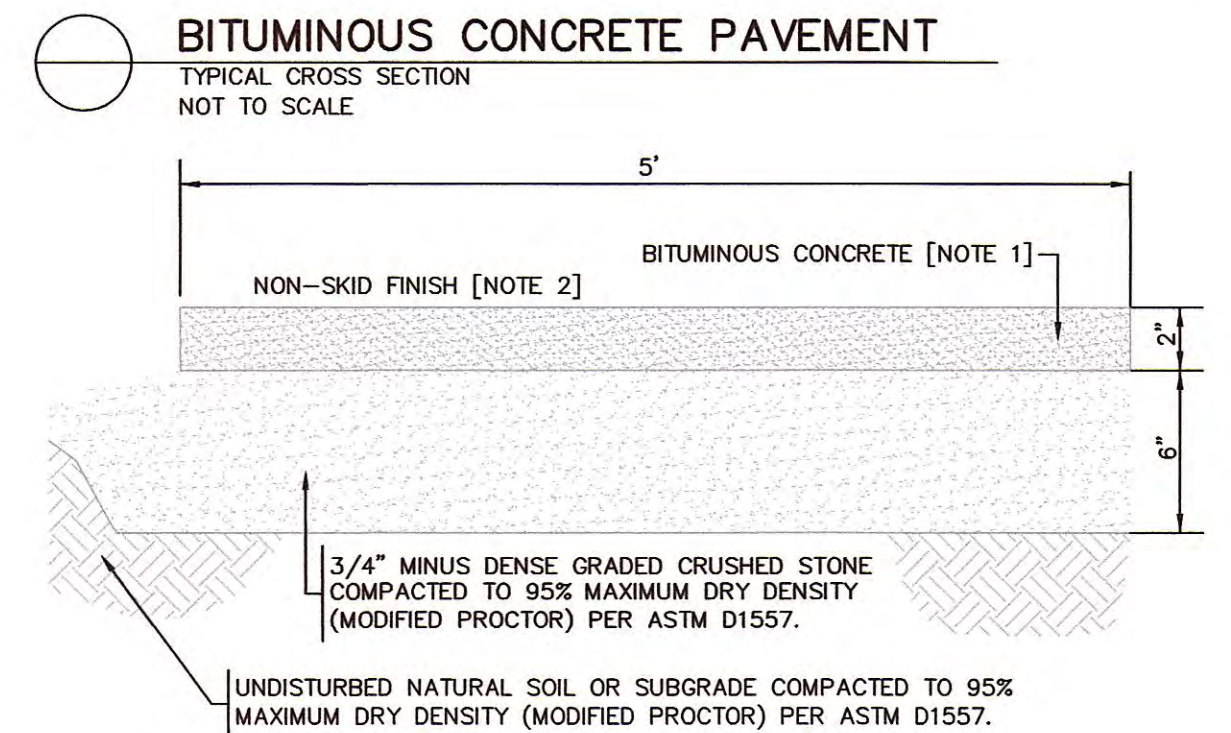
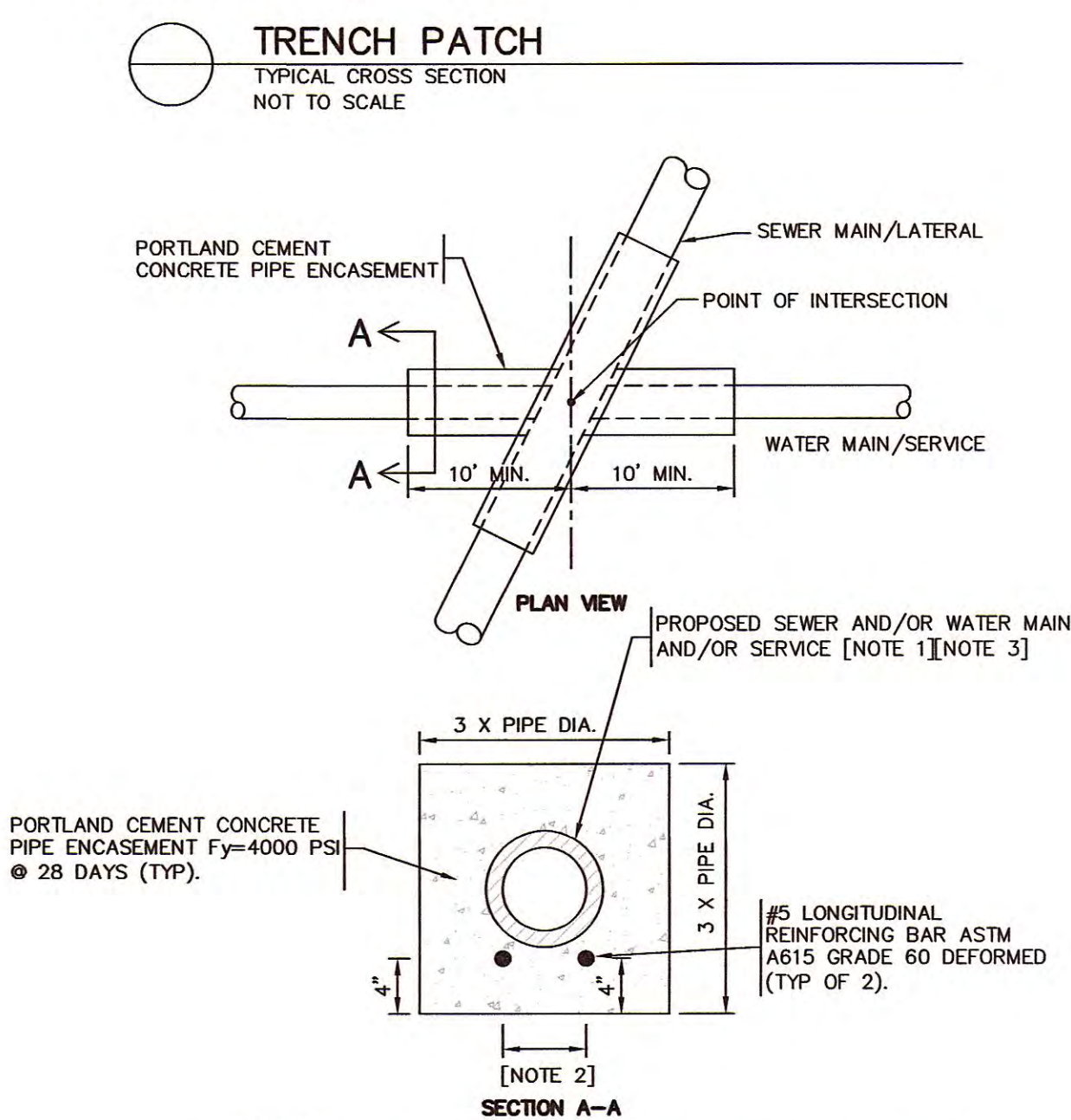
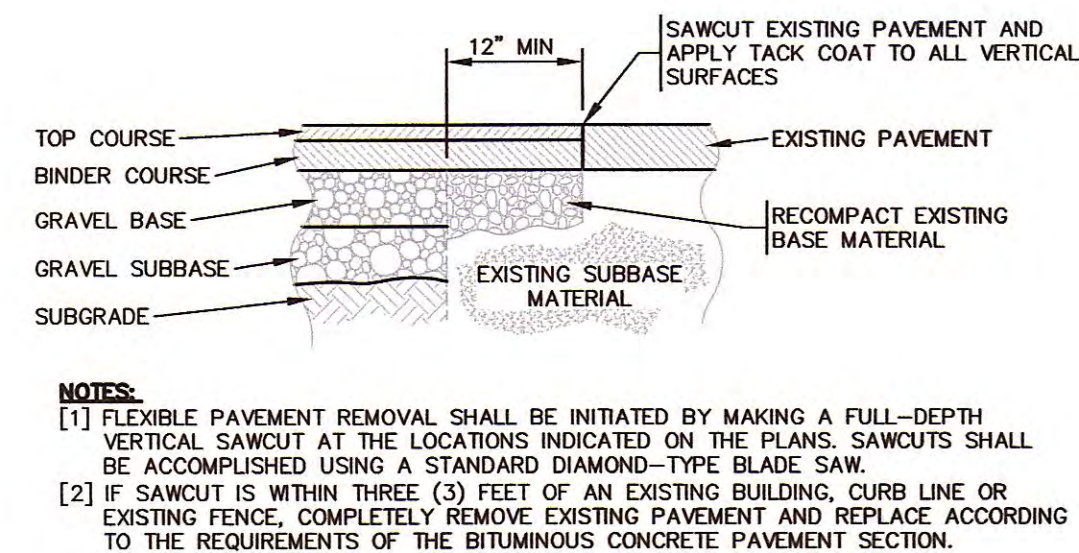
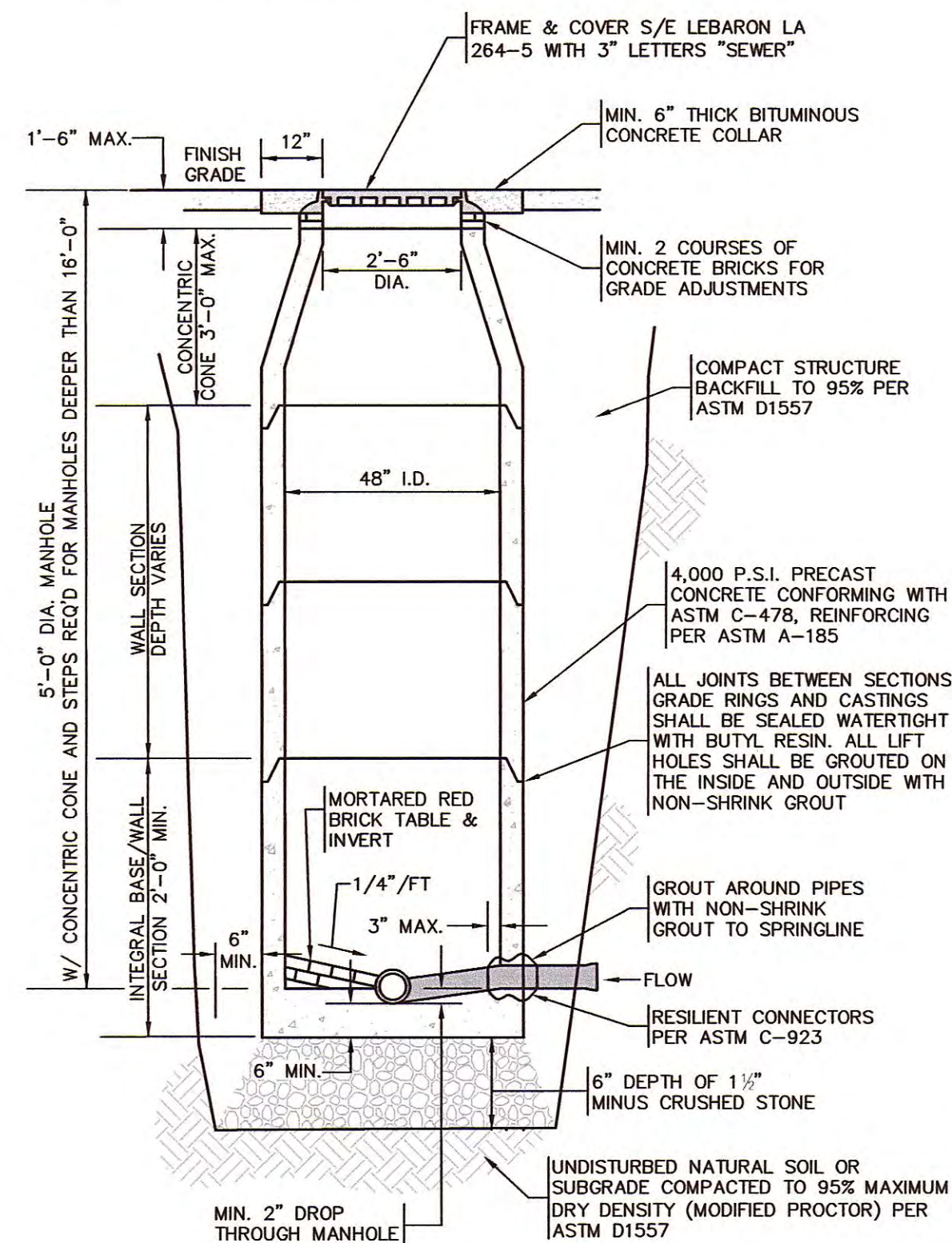
KING STREET
(AKA ROUTES 2A & 110 - (PUBLIC - 1941 STATE LAYOUT))



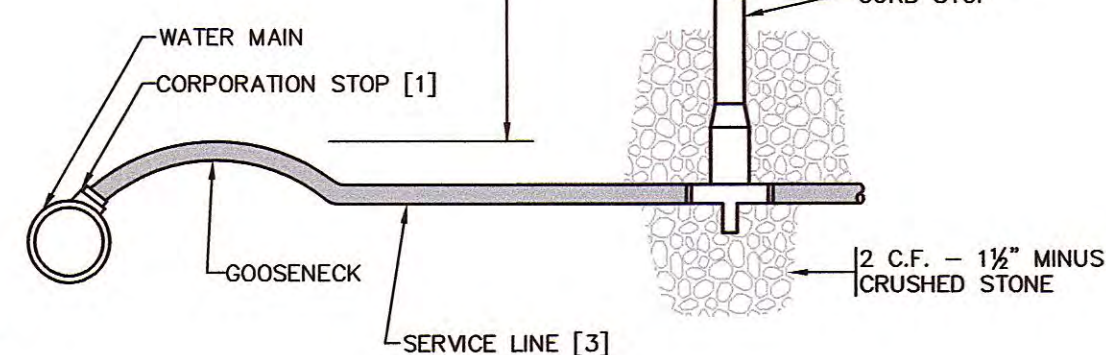
COURSE	MATERIAL	SPECIFICATION PER MASS HIGHWAY DEPARTMENT (MHD)	MAX AGG. SIZE (INCH)	COMPACTION REQUIREMENTS	
				COMPACTION	TEST DESIGNATION
TOP	HOT MIX ASPHALT	SURFACE COURSE TYPE B	1/2	[NOTE 1]	AASHTO-T166
BINDER	HOT MIX ASPHALT	BINDER COURSE TYPE A	3/4	[NOTE 1]	AASHTO-T166
BASE	CRUSHED STONE	DENSE GRADED TYPE B	2	95% [NOTE 3]	ASTM D1557/AASHTO-T99
SUBBASE	GRAVEL BORROW	M1.03.0 TYPE B	3	95% [NOTE 3]	ASTM D1557/AASHTO-T99
SUBGRADE	ORDINARY BORROW	M1.01.0 [SEE NOTE 2]	8	95% [NOTE 3]	ASTM D1557/AASHTO-T99

NOTES:

- [1] COMPACT TO TEST AVERAGE OF 95%; TEST SHALL NOT BE LOWER THAN 93%.
- [2] UNSUITABLE MATERIAL IN THE SUBGRADE SHALL BE REMOVED AND REPLACED WITH AN ACCEPTABLE SUBSTITUTE MATERIAL: 3/4" MINUS DENSE GRADED CRUSHED STONE.
- [3] MATERIAL SHALL BE SPREAD AND COMPACTED IN LAYERS NOT EXCEEDING 8-INCHES IN DEPTH, COMPACTED MEASUREMENT; LAST LAYER OF MATERIAL SHALL NOT EXCEED 4-INCHES IN DEPTH, COMPACTED MEASUREMENT.

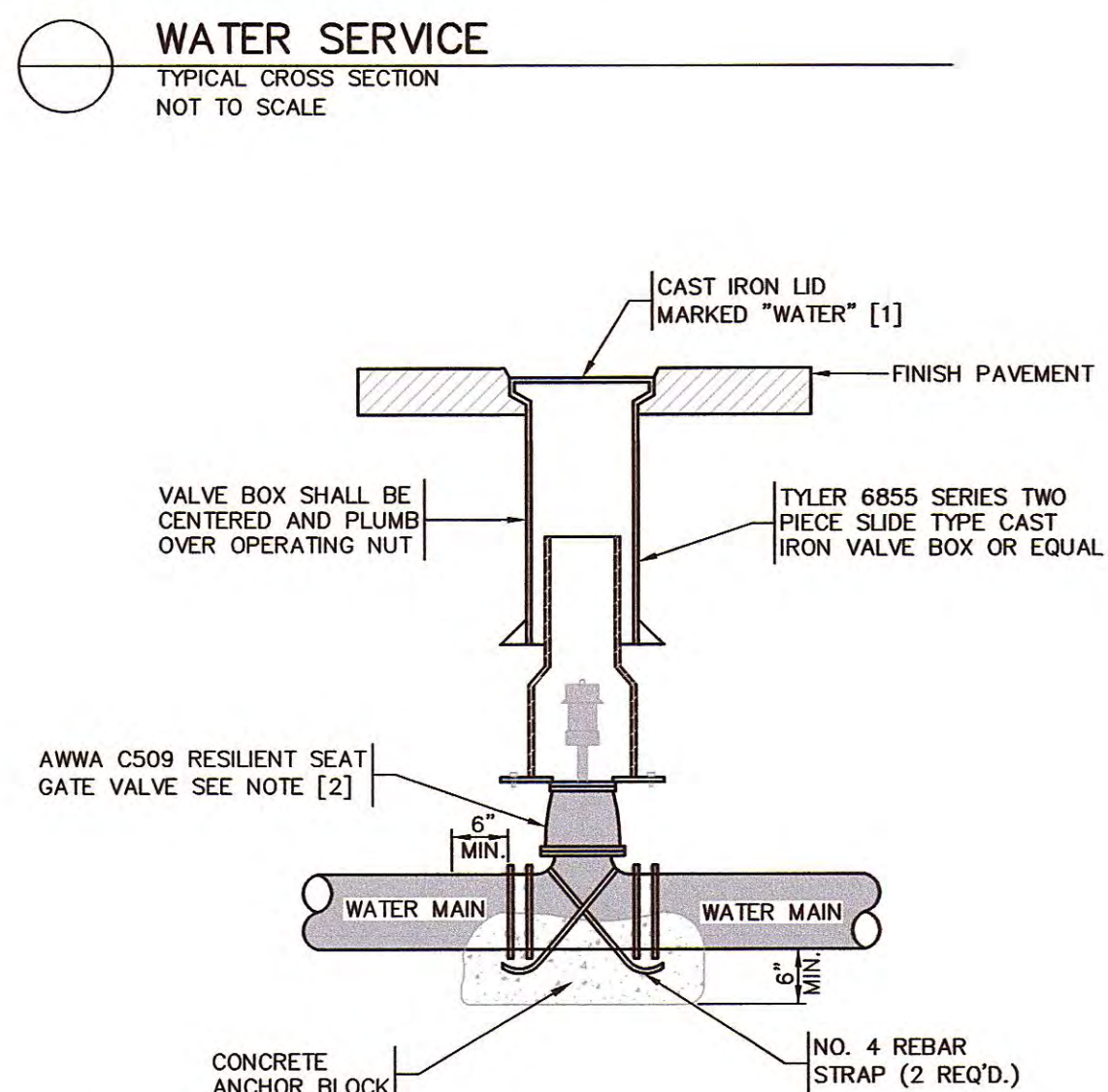
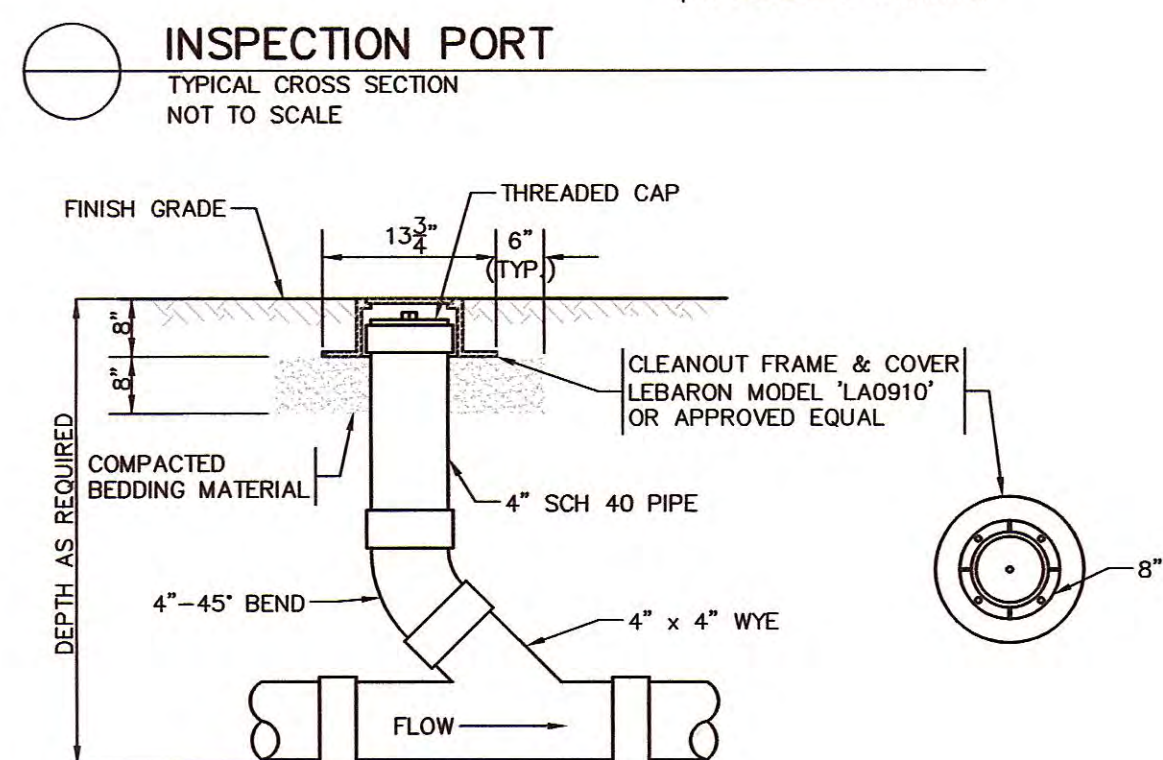
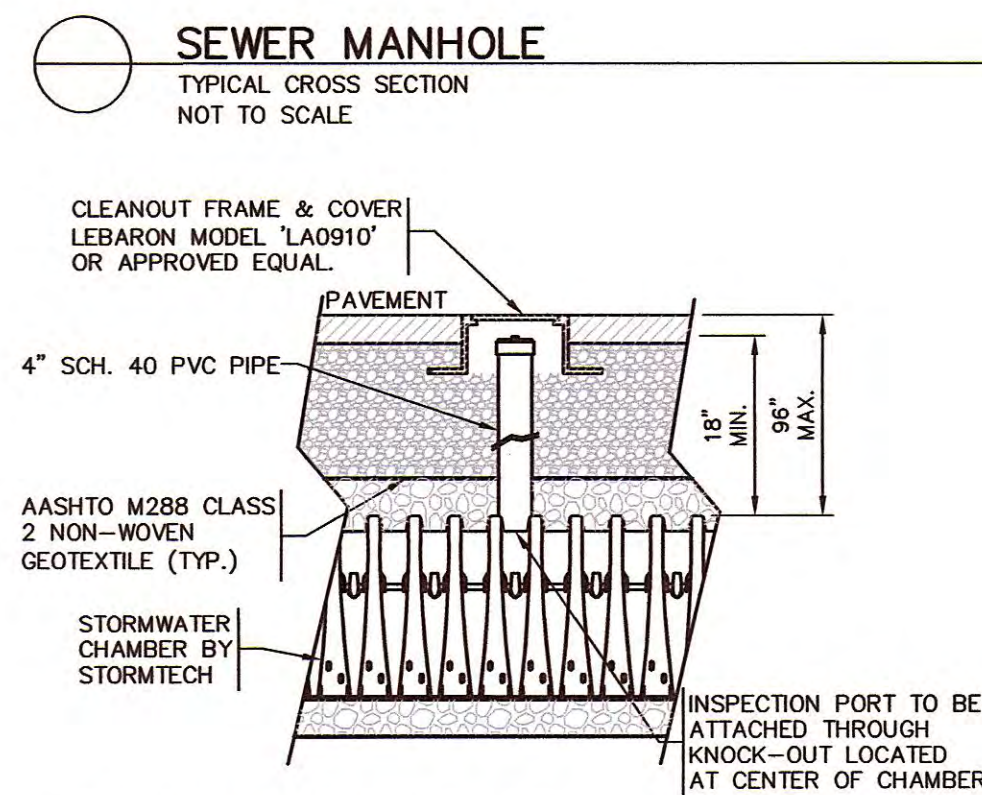


NOTES:
 [1] MHD M3.11.03 CLASS I, TYPE I-1 BITUMINOUS CONCRETE. 1/2" MAXIMUM AGGREGATE OR PARTICLE SIZE. COMPACT TO TEST AVERAGE OF 95% NO TEST LOWER THAN 93%.
 [2] SLOPE 5% MAXIMUM.

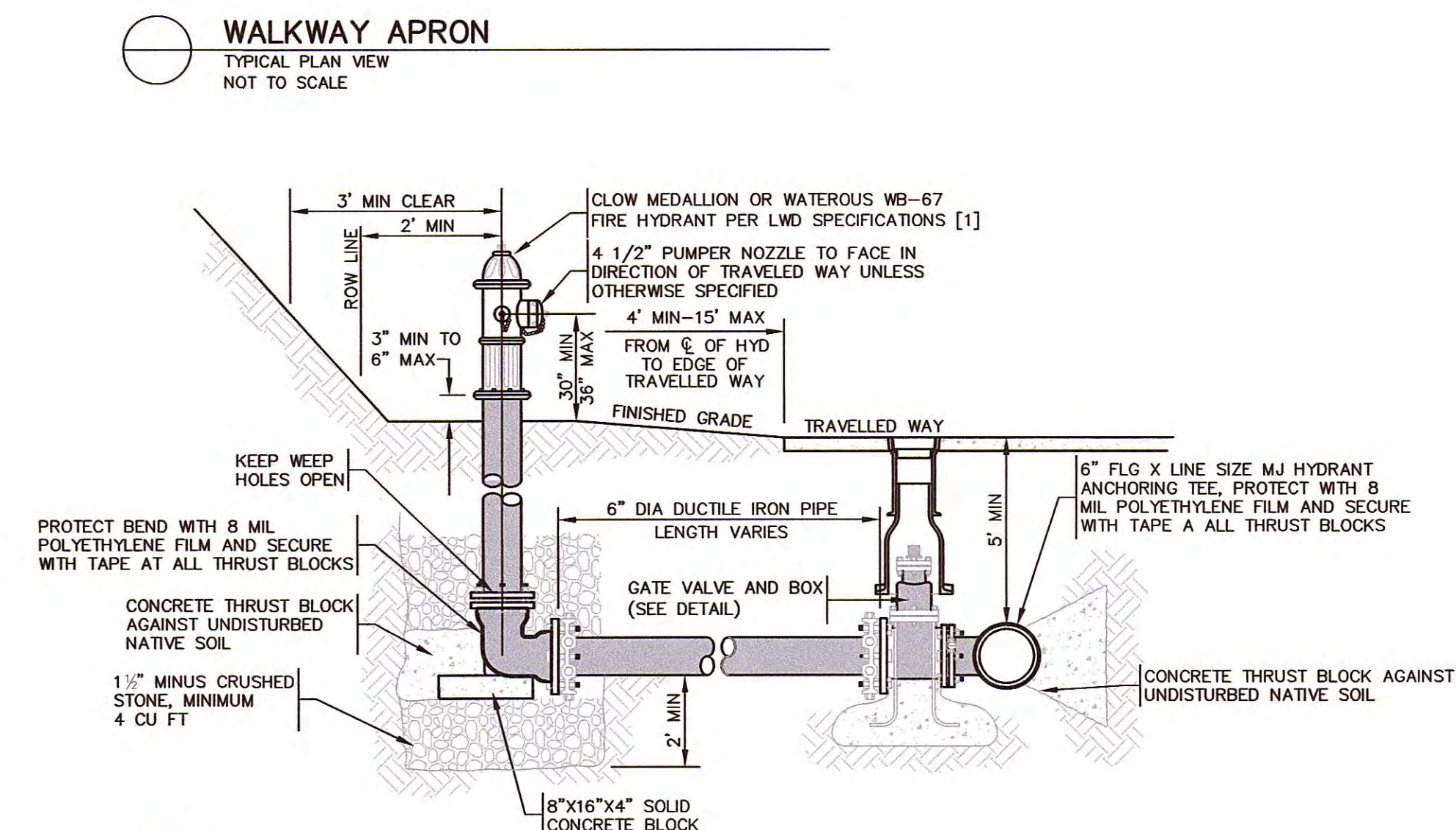
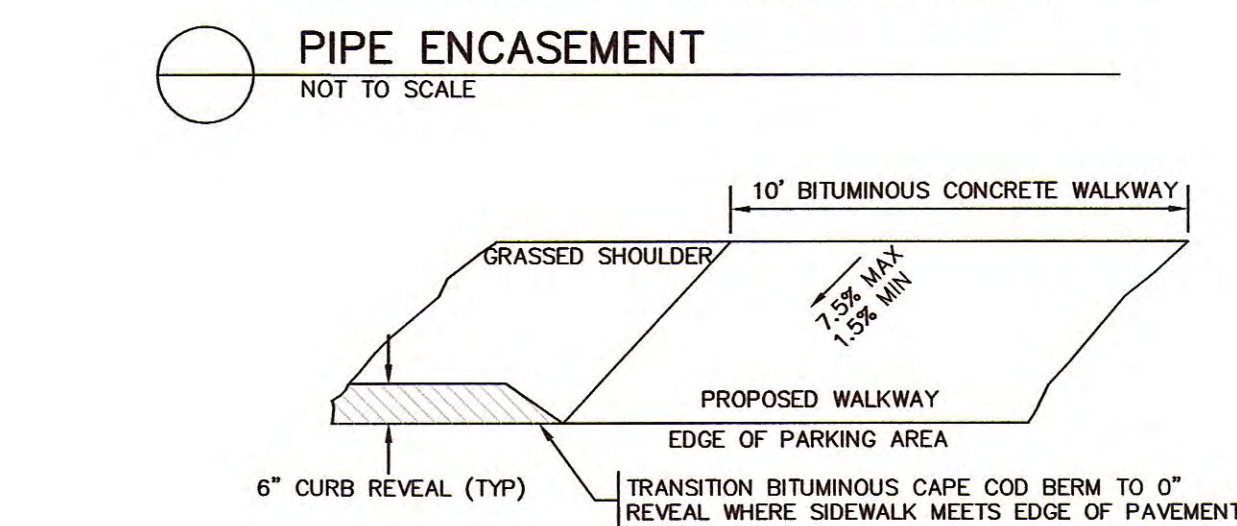


NOTES:

- [1] WATER SERVICES LARGER THAN 1" ARE TO BE RESTRAINED TO MAIN WITH APPROVED SADDLE.
- [2] COORDINATE BUILDING CONNECTION WITH PLUMBING DRAWINGS.
- [3] ALL MATERIALS PER MUNICIPAL STANDARDS.



NOTES:
 [1] SET LID AND CONCRETE COLLAR 1/4" TO 1/2" BELOW GRADE IN PAVEMENT OR OTHER AREAS TO BE PLOWED. SET LID 3" ABOVE FINISHED GRADE ELSEWHERE.
 [2] VALVE SHALL OPEN IN DIRECTION AS SPECIFIED BY THE LOCAL WATER DEPARTMENT.



NOTES:

- [1] HYDRANT SHALL MEET ALL TOWN AND AWWA STANDARDS AND BE UL/FM APPROVED AND EQUIPPED WITH (1) 4 1/2" PUMPER NOZZLE AND (2) 2 1/2" HOSE NOZZLES.
- [2] HYDRANT SHALL OPEN IN DIRECTION AS SPECIFIED BY THE LOCAL FIRE DEPARTMENT.
- [3] WHERE HYDRANT IS SHOWN BEHIND SIDEWALK, SET CENTER OF HYDRANT 2- FEET BEHIND SIDEWALK.

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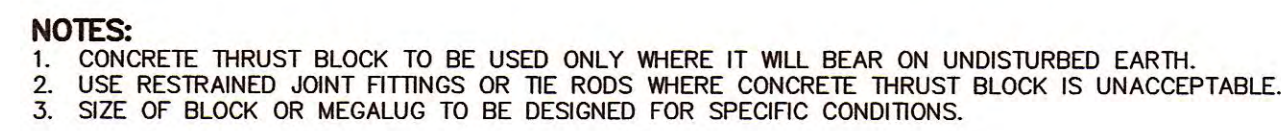
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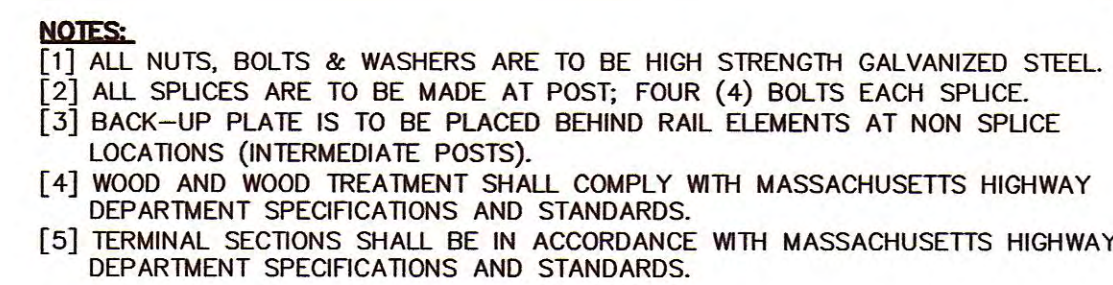
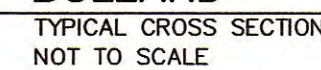
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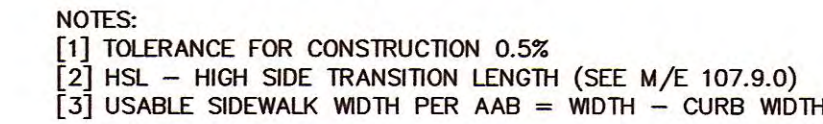
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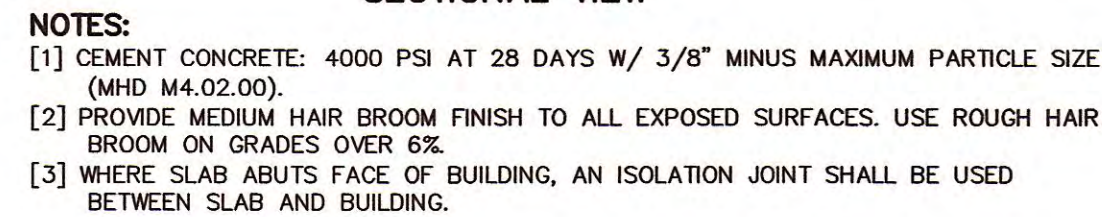
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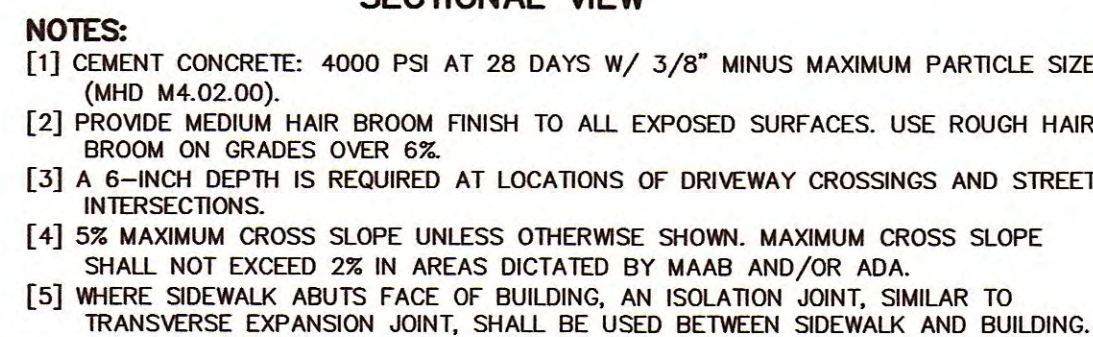
TYPICAL CROSS SECTION
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TYPICAL PLAN VIEW
NOT TO SCALE



NOT TO SCALE



NOT TO SCALE



TYPICAL CROSS SECTION
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