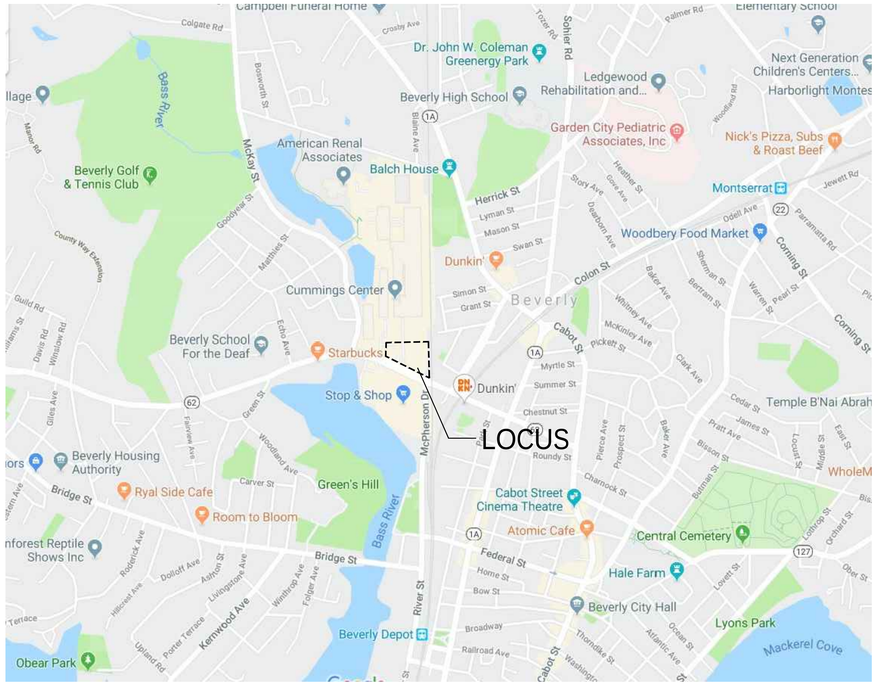
BEVERLY POLICE STATION

KBA PROJECT NO. 18028.00

175 ELLIOTT STREET
BEVERLY, MA 01915



LOCUS MAP

DRAWING LIST

DESIGN DEVELOPMENT DRAWINGS
EXISTING CONDITIONS PLAN
L1.00 - SITE DEMOLITION PLAN
L2.00 - SITE LAYOUT PLAN
L3.00 - SITE MATERIALS PLAN
L4.00 - SITE GRADING PLAN
L5.00 - SITE PLANTING PLAN
L6.00 - SITE DETAILS
L6.01 - SITE DETAILS
L6.02 - SITE DETAILS
L6.03 - SITE DETAILS
L6.04 - SITE DETAILS
C1.00 - NOTES & LEGEND
C2.00 - PHASE 1 UTILITY RELOCATION
C2.01 - PHASE 1 EROSION CONTROL & DEMO PLAN
C2.02 - PHASE 1 DETAILS
C3.00 - SEDIMENTATION & EROSION CONTROL PLAN
C4.00 - UTILITY DEMOLITION PLAN
C5.00 - PROPOSED DRAINAGE PLAN
C6.00 - PROPOSED UTILITIES
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C8.00 - EASEMENTS
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E0.03 - ELECTRICAL SITE PLAN
E0.04 - ELECTRICAL SITE LIGHTING PLAN
RD2.0 - SOLAR STUDY
A5.01 - EXTERIOR ELEVATIONS
A5.02 - EXTERIOR ELEVATIONS
H000 - HVAC LEGEND & NOTES
H001 - HVAC SCHEDULES
H002 - HVAC SCHEDULES
H101 - HVAC FIRST FLOOR
H102 - HVAC SECOND FLOOR
H103 - HVAC THIRD FLOOR

SITE PLAN REVIEW

SITE PLAN REVIEW DOCUMENTS

AUGUST 12, 2019

KAESTLE BOOS ASSOCIATES, INC.

KAESTLE BOOS associates, inc

ARCHITECTURE, LANDSCAPE & INTERIORS

CBRE HEERY	OWNERS PROJECT MANAGER
W.T RICH COMPANY, INC	CONSTRUCTION MANAGER
GRIFFIN ENGINEERING GROUP, LLC	CIVIL ENGINEERING
AIR WATER ENERGY ENGINEERS, INC	ELECTRICAL

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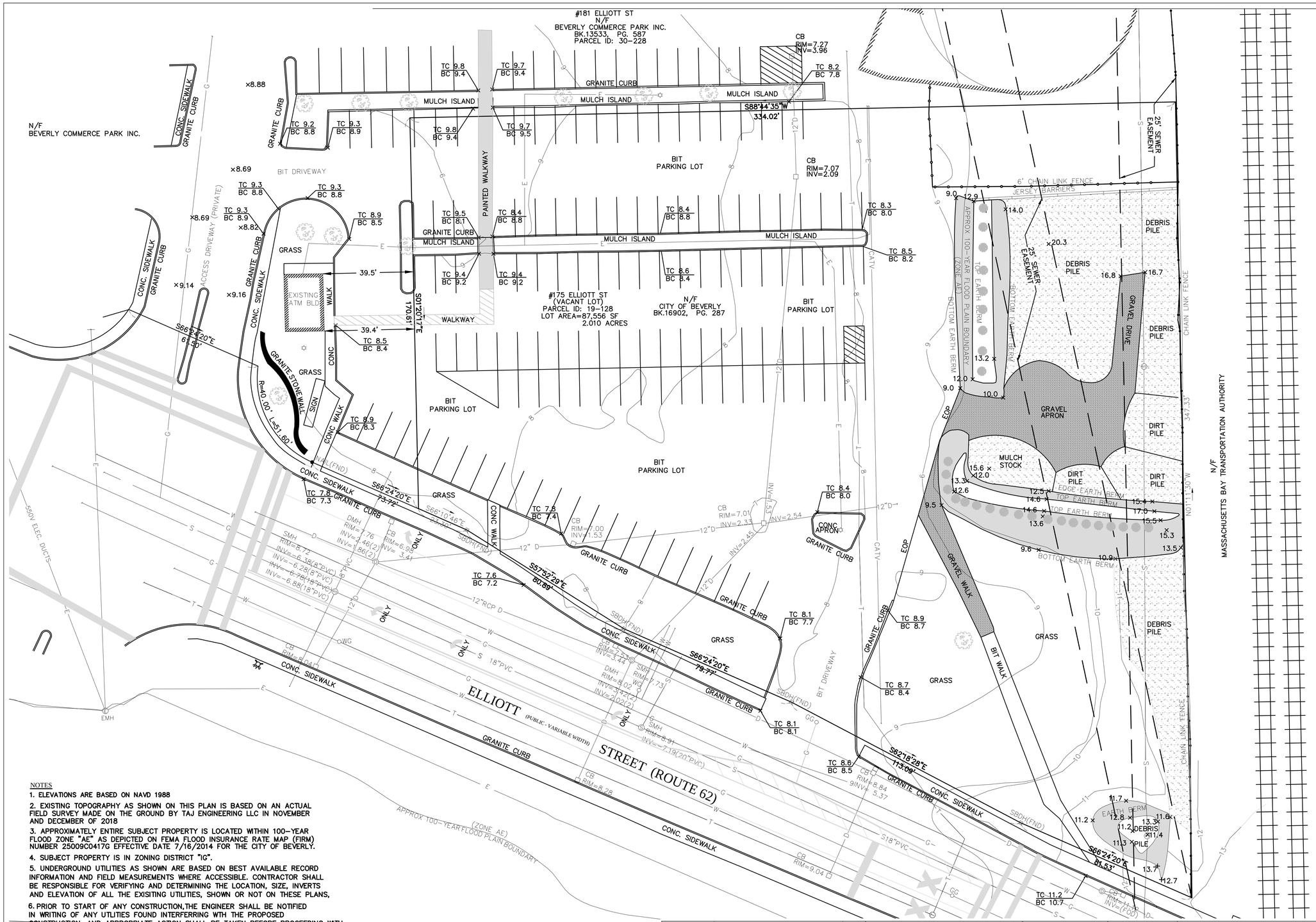


LEGEND

—S—	SEWER LINE
—G—	GAS LINE
—W—	WATER LINE
WG	WATER GATE
GG	GAS GATE
	HYDRANT
CONC	CONCRETE
BIT	BITUMINOUS
FND	FOUND
EOP	EDGE OF PAVEMENT
SMH(S)	SEWER MANHOLE
EMH(E)	ELECTRIC MANHOLE
—T—	TELEPHONE MANHOLE
DMH(D)	DRAIN MANHOLE
PH	PHONE MANHOLE
SBDH	STONE BOUND W/ DRILL HOLE
BLDG	BUILDING
—D—	DRAIN LINE
—CATV—	CABLE LINE
—E—	ELECTRIC LINE
CB	CATCH BASIN
	LIGHT POST
FOD	FULL OF DIRT
RCP	REINIFORCED CONCRETE PIPE
	CONIFEROUS TREE
	DECIDUOUS TREE

MASS STATE MAINLAND NAD 83

PLAN REFERENCES

PLAN BOOK	PLAN NO.
351	70
453	32

SUBDIVISION PLAN OF LAND BY GRIFFIN ENGINEERING AND GRE SURVEYING DATED 02-13-01, LAND COURT PLAN 42597A

OWNER OF RECORD

CITY OF BEVERLY, MA.
BK: 16902, PG: 287
PARCEL ID: 19-128

NOTES

1. ELEVATIONS ARE BASED ON NAVD 1988
2. EXISTING TOPOGRAPHY AS SHOWN ON THIS PLAN IS BASED ON AN ACTUAL FIELD SURVEY MADE ON THE GROUND BY TAJ ENGINEERING LLC IN NOVEMBER AND DECEMBER OF 2018
3. APPROXIMATELY ENTIRE SUBJECT PROPERTY IS LOCATED WITHIN 100-YEAR FLOOD ZONE "AE" AS DEPICTED ON FEMA FLOOD INSURANCE RATE MAP (FIRM) NUMBER 25009C0417G EFFECTIVE DATE 7/16/2014 FOR THE CITY OF BEVERLY.
4. SUBJECT PROPERTY IS IN ZONING DISTRICT "IG".
5. UNDERGROUND UTILITIES AS SHOWN ARE BASED ON BEST AVAILABLE RECORD INFORMATION AND FIELD MEASUREMENTS WHERE ACCESSIBLE. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING AND DETERMINING THE LOCATION, SIZE, INVERTS AND ELEVATION OF ALL THE EXISITING UTILITIES, SHOWN OR NOT ON THESE PLANS,
6. PRIOR TO START OF ANY CONSTRUCTION,THE ENGINEER SHALL BE NOTIFIED IN WRITING OF ANY UTLITIES FOUND INTERFERRING WTH THE PROPOSED CONSTRUCTION, AND APPROPRIATE ACTION SHALL BE TAKEN BEFORE PROCEEDING WITH THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING " DIG SAFE" AT 811 AT LEAST 72 HOURS BEFORE ANY EXCAVATION.

DATE	COMMENT	BY
		HSA

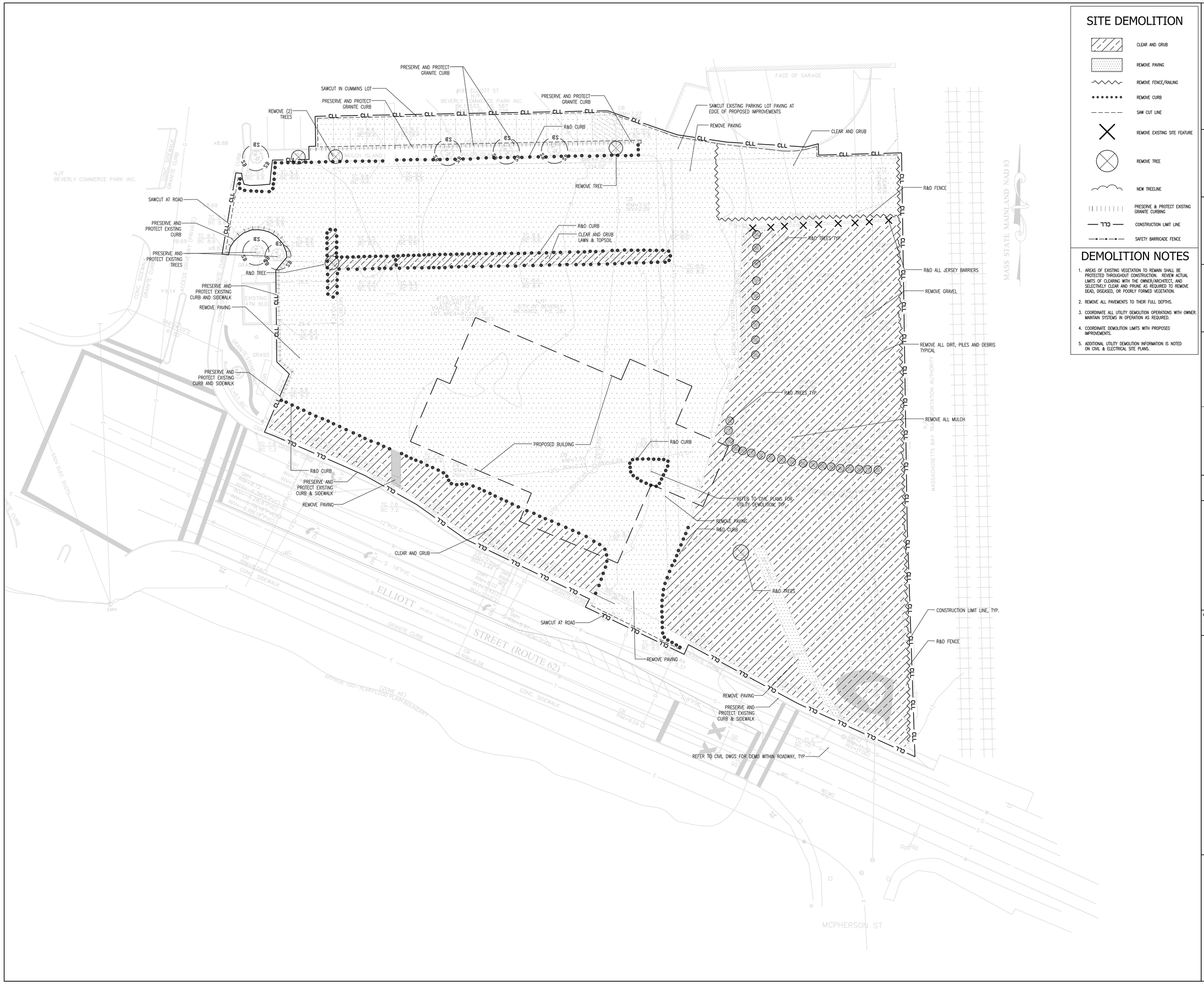
GRAPHIC SCALE
0 20 30 40 60
SCALE: 1"=20'

JOB. NO: 18-561	FLD. BK: TAJ 19		
DATE: 12/19/2018	CHECK: HSA		
SCALE: 1" = 20 FT.	SURVEY: SC/DC/GC		
SHEET: 1 OF 1	CALC: HSA		
	DRAFT: SC/JP		

EXISTING CONDITIONS PLAN
BEVERLY POLICE STATION
175 ELLIOTT STREET, BEVERLEY, MA

PREPARED FOR:
CITY OF BEVERLY

TAJ ENGINEERING, LLC
CIVIL & STRUCTURAL ENGINEERS. LAND SURVEYORS
PROJECT MANAGEMENT. PERMITTING
225 STEDMAN ST, SUITE 36B, LOWELL, MA, 01851
7 MONTVIEW ROAD, CHELMSFORD, MA, 01824
PHONE: 978-250-8173 FAX: 978-770-0632
Info@tajengineering.net



SITE DEMOLITION

- CLEAR AND GRUB
- REMOVE PAVING
- REMOVE FENCE/RAILING
- REMOVE CURB
- SAW CUT LINE
- REMOVE EXISTING SITE FEATURE
- REMOVE TREE
- NEW TREELINE
- PRESERVE & PROTECT EXISTING GRANITE CURBING
- CONSTRUCTION LIMIT LINE
- SAFETY BARRICADE FENCE

DEMOLITION NOTES

1. AREAS OF EXISTING VEGETATION TO REMAIN SHALL BE PROTECTED THROUGHOUT CONSTRUCTION. REVIEW ACTUAL LIMITS OF CLEARING WITH THE OWNER/ARCHITECT, AND SELECTIVELY CLEAR AND PRUNE AS REQUIRED TO REMOVE DEAD, DISEASED, OR POORLY FORMED VEGETATION.
2. REMOVE ALL PAVEMENTS TO THEIR FULL DEPTHS.
3. COORDINATE ALL UTILITY DEMOLITION OPERATIONS WITH OWNER. MAINTAIN SYSTEMS IN OPERATION AS REQUIRED.
4. COORDINATE DEMOLITION LIMITS WITH PROPOSED IMPROVEMENTS.
5. ADDITIONAL UTILITY DEMOLITION INFORMATION IS NOTED ON CIVIL & ELECTRICAL SITE PLANS.

KAESTLE BOOS associates, inc

416 Slater Road, P.O. Box 2590, New Britain, CT 06050-2590
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Additional offices located in Massachusetts and Rhode Island
Email: kba@kba-architects.com ▲ Web: www.kba-architects.com

ISSUE DATE

DATE	DESCRIPTION
AUGUST 2, 2019	DESIGN DEVELOPMENT ESTIMATE SET
AUGUST 12, 2019	PLANNNING BOARD SUBMISSION

REVISIONS

DATE	DESCRIPTION

FOR ALL ABBREVIATIONS, SYMBOL LEGENDS, AND GENERAL NOTES SEE SHEET R0.01

KEY PLAN

0' 20' 40'
SCALE: 1" = 20'-0"
PROJECT TRUE

BEVERLY POLICE DEPARTMENT

175 Elliott Street Beverly, MA 01915

PROJECT NO.: 18028.00 DRAWN BY: Author

SITE DEMOLITION PLAN

DRAWING NO.:
L1.00

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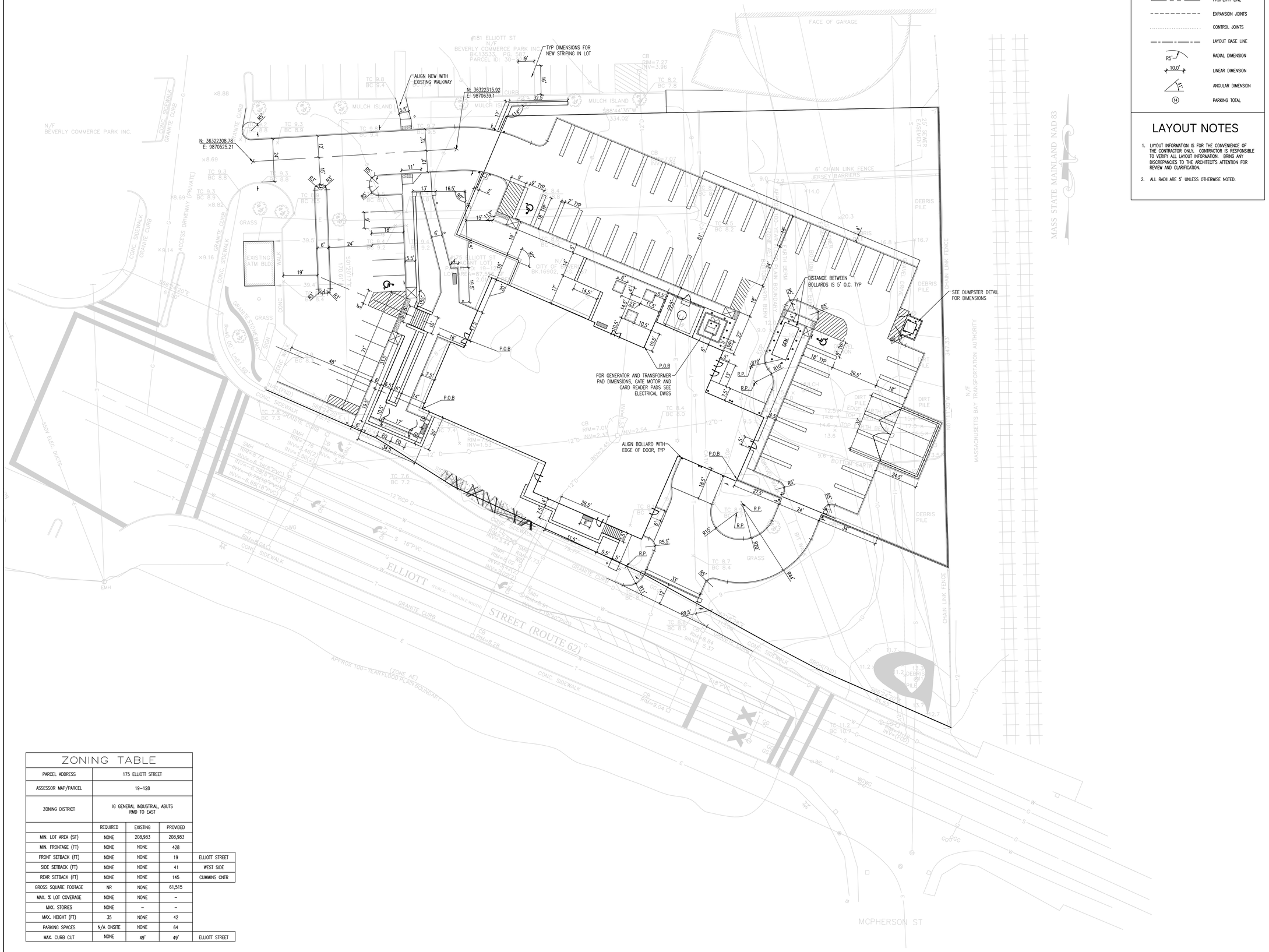

ZONING TABLE

PARCEL ADDRESS	175 ELLIOTT STREET			
ASSESSOR MAP/PARCEL	19-128			
ZONING DISTRICT	IG GENERAL INDUSTRIAL, ABUTS RMD TO EAST			
	REQUIRED	EXISTING	PROVIDED	
MIN. LOT AREA (SF)	NONE	208,983	208,983	
MIN. FRONTAGE (FT)	NONE	NONE	428	
FRONT SETBACK (FT)	NONE	NONE	19	ELLIOTT STREET
SIDE SETBACK (FT)	NONE	NONE	41	WEST SIDE
REAR SETBACK (FT)	NONE	NONE	145	CUMMINS CNTR
GROSS SQUARE FOOTAGE	NR	NONE	61,515	
MAX. % LOT COVERAGE	NONE	NONE	–	
MAX. STORIES	NONE	–	–	
MAX. HEIGHT (FT)	35	NONE	42	
PARKING SPACES	N/A ONSITE	NONE	64	
MAX. CURB CUT	NONE	49'	49'	ELLIOTT STREET

LAYOUT LEGEND

- PROPERTY LINE
- EXPANSION JOINTS
- CONTROL JOINTS
- LAYOUT BASE LINE
- R5' — RADIAL DIMENSION
- 10.0' — LINEAR DIMENSION
- 15° — ANGULAR DIMENSION
- (14) — PARKING TOTAL

LAYOUT NOTES

1. LAYOUT INFORMATION IS FOR THE CONVENIENCE OF THE CONTRACTOR ONLY. CONTRACTOR IS RESPONSIBLE TO VERIFY ALL LAYOUT INFORMATION. BRING ANY DISCREPANCIES TO THE ARCHITECT'S ATTENTION FOR REVIEW AND CLARIFICATION.
2. ALL RADII ARE 5' UNLESS OTHERWISE NOTED.

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KEY PLAN

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SCALE: 1" = 20'-0"
PROJECT TRUE

BEVERLY POLICE DEPARTMENT

175 Elliott Street Beverly, MA 01915

PROJECT NO.: 18028.00 DRAWN BY: Author

SITE LAYOUT PLAN

DRAWING NO.:
L2.00

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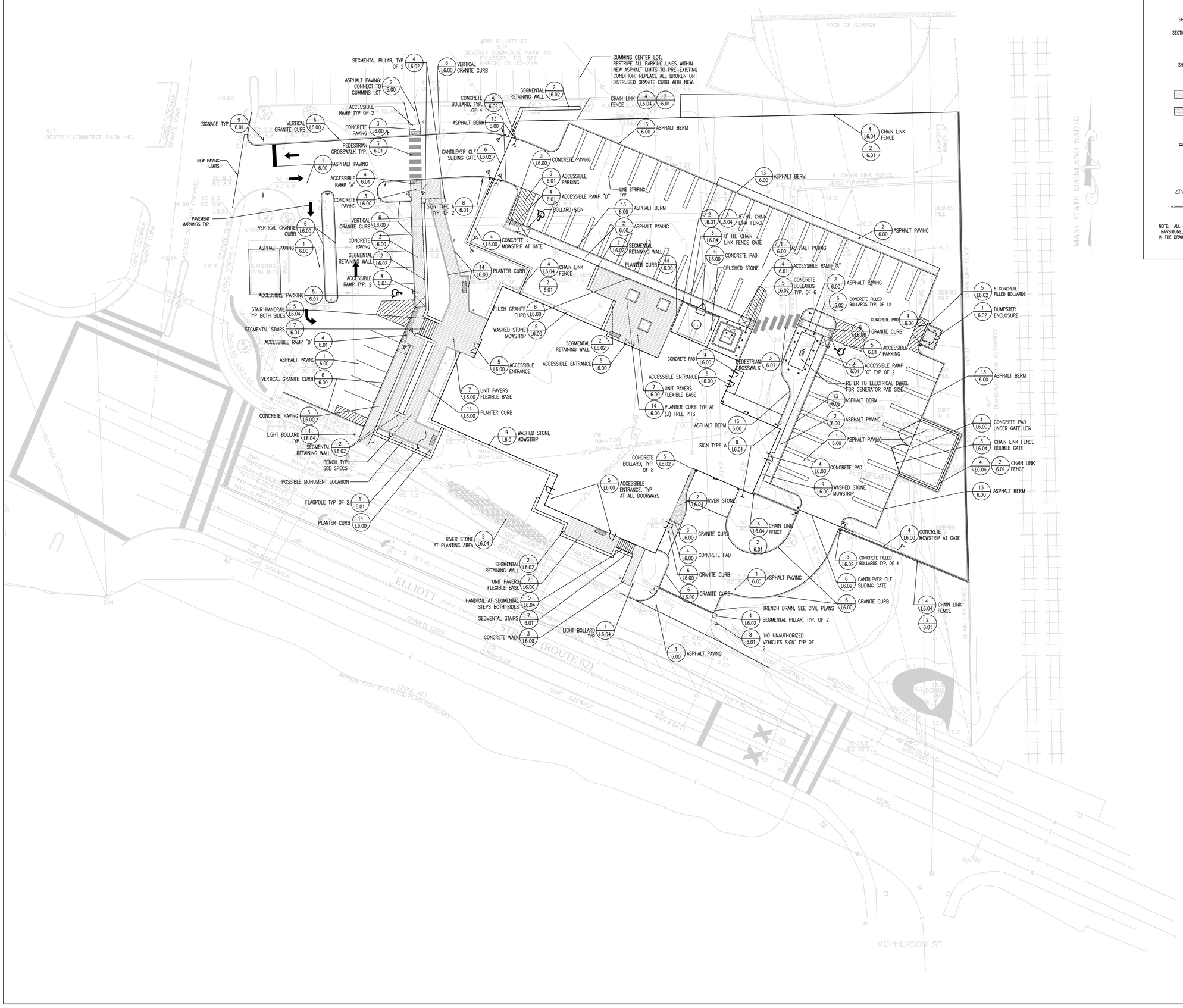

MATERIALS LEGEND

- DETAIL / SHEET — DETAIL REFERENCE TAG
- SECTION / SHEET — SECTION REFERENCE TAG
- DENOTES MATERIAL CHANGE
- CONCRETE PAVING
- PAVER PAVING
- SIGNAGE
- LIGHTING
- CURBING
- CONCRETE CURB RAMP
- GATES
- FENCE

NOTE: ALL CURB CUTS AND CURB ENDS SHALL BE TRANSITIONED TO FINISHED GRADES UNLESS OTHERWISE NOTED IN THE DRAWINGS.

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KEY PLAN

0' 20' 40'
SCALE: 1" = 20'-0"
PROJECT TRUE

BEVERLY POLICE DEPARTMENT

175 Elliott Street Beverly, MA 01915

PROJECT NO.: 18028.00 DRAWN BY: Author

SITE MATERIALS PLAN

DRAWING NO.:
L3.00

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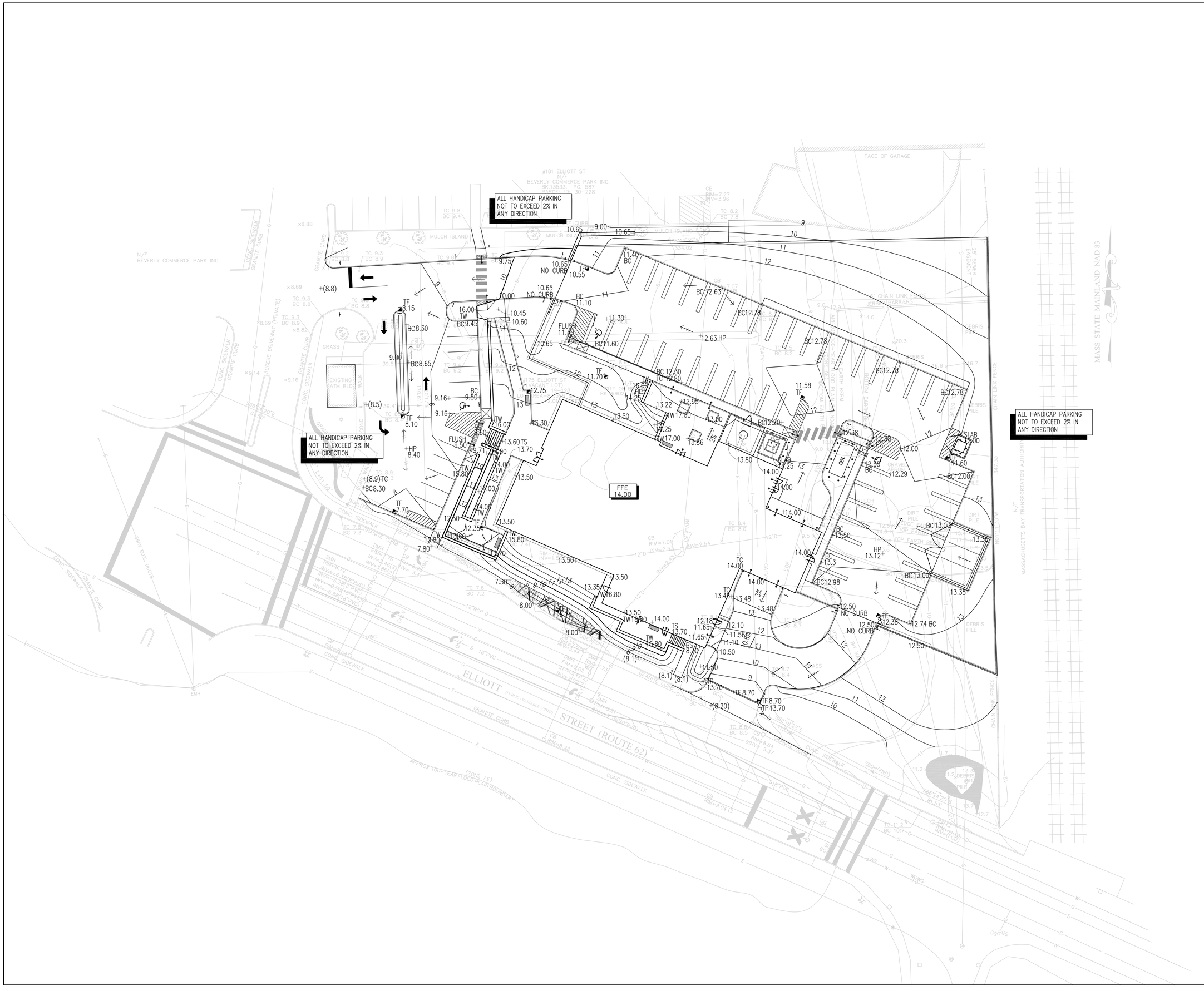

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PROJECT NO.: 18028.00 DRAWN BY: Author

SITE GRADING PLAN

DRAWING NO.:
L4.00

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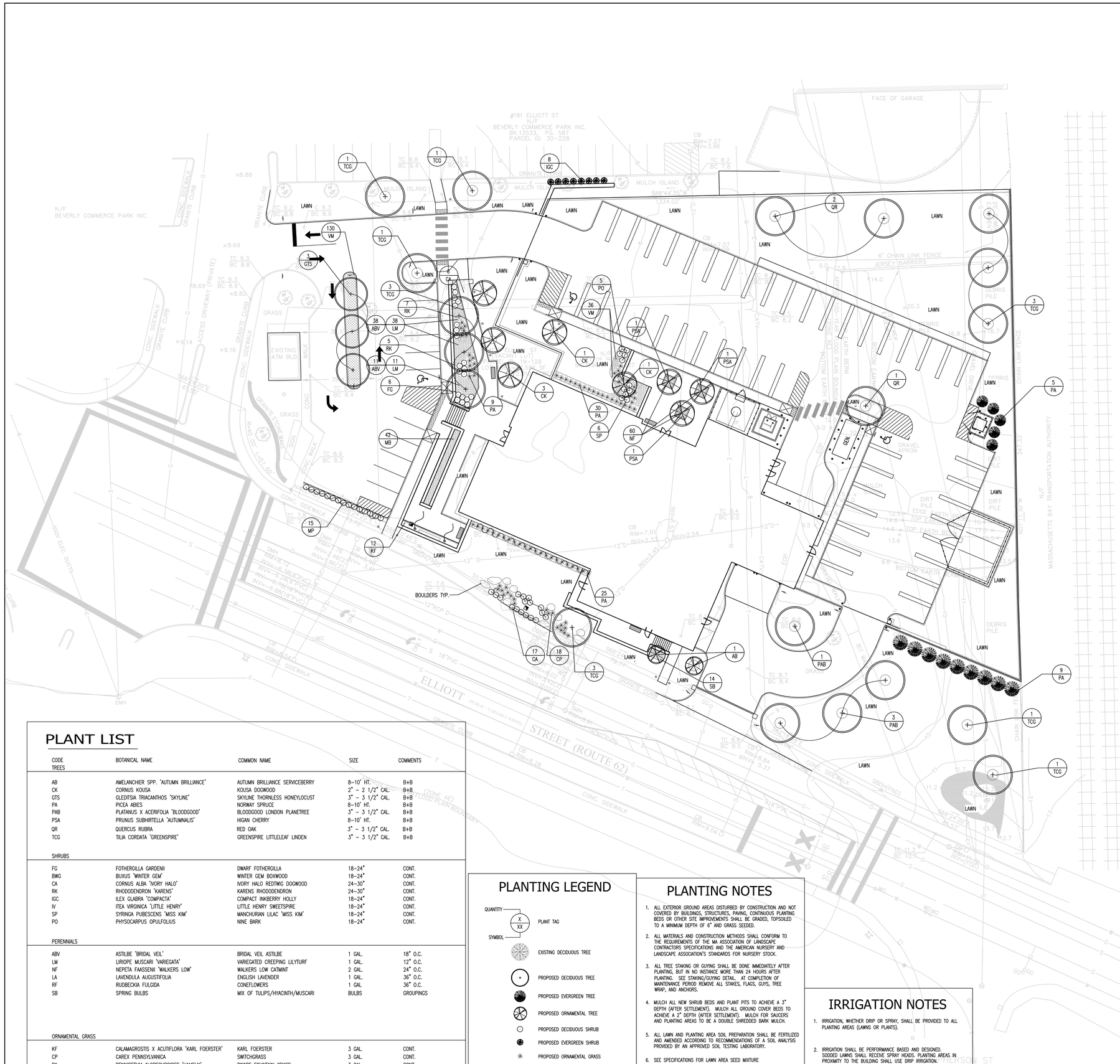

PLANT LIST

CODE	BOTANICAL NAME	COMMON NAME	SIZE	COMMENTS
TREES				
AB	AMELANCHIER SPP. 'AUTUMN BRILLIANCE'	AUTUMN BRILLIANCE SERVICEBERRY	8–10' HT.	B+B
CK	CORNUS KOUSA	KOUSA DOGWOOD	2" – 2 1/2" CAL.	B+B
GTS	GLEDITSIA TRIACANTHOS 'SKYLINE'	SKYLINE THORNLESS HONEYLOCUST	3" – 3 1/2" CAL.	B+B
PA	PICEA ABIES	NORWAY SPRUCE	8–10' HT.	B+B
PAB	PLATANUS X ACERIFOLIA 'BLOODGOOD'	BLOODGOOD LONDON PLANETREE	3" – 3 1/2" CAL.	B+B
PSA	PRUNUS SUBHIRTELLA 'AUTUMNALIS'	HIGAN CHERRY	8–10' HT.	B+B
QR	QUERCUS RUBRA	RED OAK	3" – 3 1/2" CAL.	B+B
TCG	TILIA CORDATA 'GREENSPIRE'	GREENSPIRE LITTLELEAF LINDEN	3" – 3 1/2" CAL.	B+B
SHRUBS				
FG	FOTHERGILLA GARDENII	DWARF FOTHERGILLA	18–24"	CONT.
BWG	BUXUS 'WINTER GEM'	WINTER GEM BOXWOOD	18–24"	CONT.
CA	CORNUS ALBA 'IVORY HALO'	IVORY HALO REDTWIG DOGWOOD	24–30"	CONT.
RK	RHODODENDRON 'KARENS'	KARENS RHODODENDRON	24–30"	CONT.
IGC	ILEX GLABRA 'COMPACTA'	COMPACT INKBERRY HOLLY	18–24"	CONT.
IV	ITEA VIRGINICA 'LITTLE HENRY'	LITTLE HENRY SWEETSPIRE	18–24"	CONT.
SP	SYRINGA PUBESCENS 'MISS KIM'	MANCHURIAN LILAC 'MISS KIM'	18–24"	CONT.
PO	PHYSOCARPUS OPULFOLIUS	NINE BARK	18–24"	CONT.
PERENNIALS				
ABV	ASTILBE 'BRIDAL VEIL'	BRIDAL VEIL ASTILBE	1 GAL.	18" O.C.
LM	LIRIOPE MUSCARI 'VARIEGATA'	VARIEGATED CREEPING LILYTURF	1 GAL.	12" O.C.
NF	NEPETA FAASSENII 'WALKERS LOW'	WALKERS LOW CATMINT	2 GAL.	24" O.C.
LA	LAVENDULA AUGUSTIFOLIA	ENGLISH LAVENDER	1 GAL.	36" O.C.
RF	RUDBECKIA FULGIDA	CONEFLOWERS	1 GAL	36" O.C.
SB	SPRING BULBS	MIX OF TULIPS/HYACINTH/MUSCARI	BULBS	GROUPINGS
ORNAMENTAL GRASS				
KF	CALAMAGROSTIS X ACUTIFLORA 'KARL FOERSTER'	KARL FOERSTER	3 GAL.	CONT.
CP	CAREX PENNSYLVANICA	SWITCHGRASS	3 GAL.	CONT.
PA	PENNISETUM ALOPECUROIDES 'HAMELN'	DWARF FOUNTAIN GRASS	3 GAL.	CONT.
GROUNDCOVER				
VM	VINCA MINOR 'BOWLES'	VINCA	FLATS	12" SPACING
PS	PHLOX STOLONIFERA	CREEPING PHLOX	FLATS	12" SPACING

PLANTING LEGEND

QUANTITY — X / XX — SYMBOL

PLANT TAG

EXISTING DECIDUOUS TREE

PROPOSED DECIDUOUS TREE

PROPOSED EVERGREEN TREE

PROPOSED ORNAMENTAL TREE

PROPOSED DECIDUOUS SHRUB

PROPOSED EVERGREEN SHRUB

PROPOSED ORNAMENTAL GRASS

PROPOSED SOD

PROPOSED PERENNIALS

PLANTING NOTES

1. ALL EXTERIOR GROUND AREAS DISTURBED BY CONSTRUCTION AND NOT COVERED BY BUILDINGS, STRUCTURES, PAVING, CONTINUOUS PLANTING BEDS OR OTHER SITE IMPROVEMENTS SHALL BE GRADED, TOPSOILED TO A MINIMUM DEPTH OF 6" AND GRASS SEEDED.
2. ALL MATERIALS AND CONSTRUCTION METHODS SHALL CONFORM TO THE REQUIREMENTS OF THE MA ASSOCIATION OF LANDSCAPE CONTRACTORS SPECIFICATIONS AND THE AMERICAN NURSERY AND LANDSCAPE ASSOCIATION'S STANDARDS FOR NURSERY STOCK.
3. ALL TREE STAKING OR GUYING SHALL BE DONE IMMEDIATELY AFTER PLANTING, BUT IN NO INSTANCE MORE THAN 24 HOURS AFTER PLANTING. SEE STAKING/GUYING DETAIL. AT COMPLETION OF MAINTENANCE PERIOD REMOVE ALL STAKES, FLAGS, GUYS, TREE WRAP, AND ANCHORS.
4. MULCH ALL NEW SHRUB BEDS AND PLANT PITS TO ACHIEVE A 3" DEPTH (AFTER SETTLEMENT). MULCH ALL GROUND COVER BEDS TO ACHIEVE A 2" DEPTH (AFTER SETTLEMENT). MULCH FOR SAUCERS AND PLANTING AREAS TO BE A DOUBLE SHREDDED BARK MULCH.
5. ALL LAWN AND PLANTING AREA SOIL PREPARATION SHALL BE FERTILIZED AND AMENDED ACCORDING TO RECOMMENDATIONS OF A SOIL ANALYSIS PROVIDED BY AN APPROVED SOIL TESTING LABORATORY.
6. SEE SPECIFICATIONS FOR LAWN AREA SEED MIXTURE
7. PROVIDE LAWN DEVELOPMENT IN ALL AREAS OF SELECTIVE CLEARING AS DIRECTED.

   FINAL LOCATION OF PLANT MATERIAL TO BE APPROVED BY LANDSCAPE ARCHITECT IN THE FIELD.

IRRIGATION NOTES

1. IRRIGATION, WHETHER DRIP OR SPRAY, SHALL BE PROVIDED TO ALL PLANTING AREAS (LAWNS OR PLANTS).
2. IRRIGATION SHALL BE PERFORMANCE BASED AND DESIGNED. SODDED LAWNS SHALL RECEIVE SPRAY HEADS. PLANTING AREAS IN PROXIMITY TO THE BUILDING SHALL USE DRIP IRRIGATION.
3. IRRIGATION CONDUIT IS SHOWN FOR CONVENIENCE. IT IS THE CONTRACTOR'S RESPONSIBILITY TO LOCATE & PROVIDE CONDUIT TO ALL AREAS CALLED OUT TO BE IRRIGATED.

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KEY PLAN

0' 20' 40'
SCALE: 1" = 20'-0"
PROJECT TRUE

BEVERLY POLICE DEPARTMENT

175 Elliott Street Beverly, MA 01915

PROJECT NO.: 18028.00 DRAWN BY: Author

SITE PLANTING PLAN

DRAWING NO.:
L5.00

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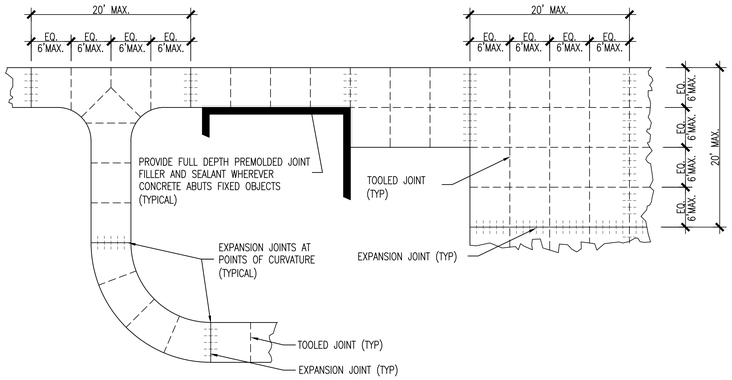
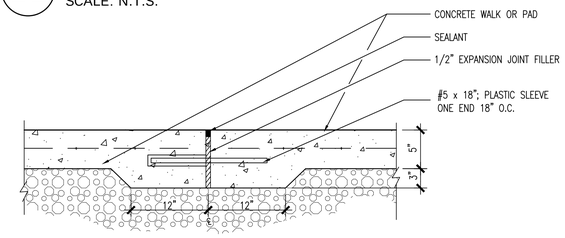


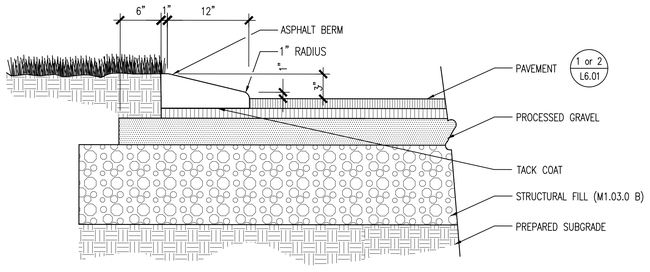
11 TYPICAL JOINT PLACEMENT IN CONCRETE

SCALE: N.T.S.



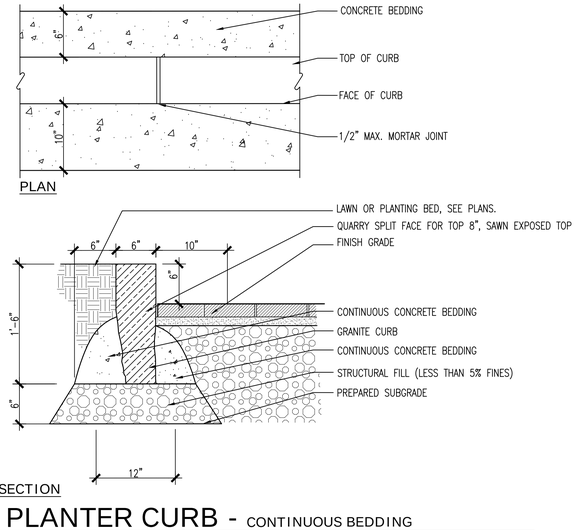
12 EXPANSION JOINT

SCALE: N.T.S.



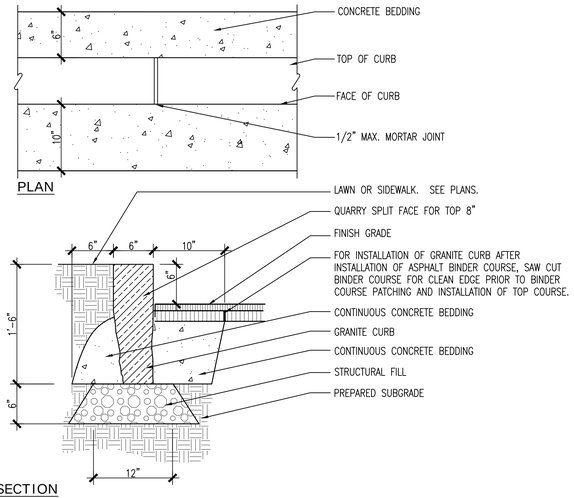
13 ASPHALT BERM

SCALE: N.T.S.



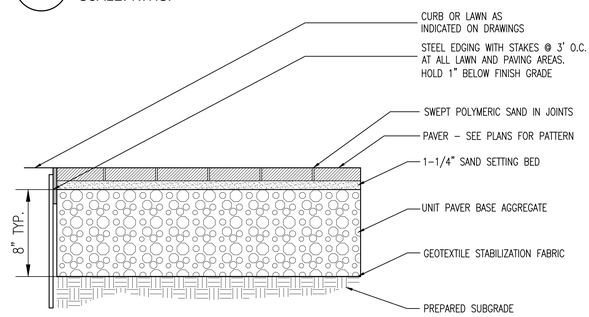
14 PLANTER CURB - CONTINUOUS BEDDING

SCALE: N.T.S.



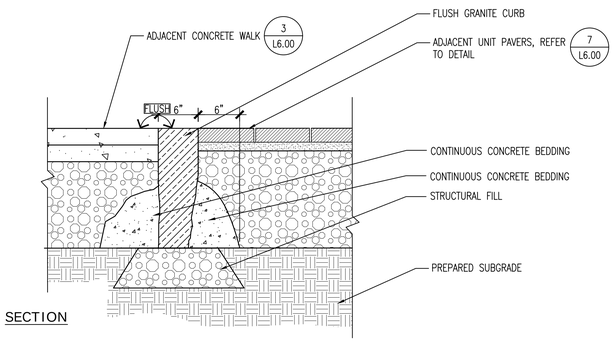
6 GRANITE CURB - CONTINUOUS BEDDING

SCALE: N.T.S.



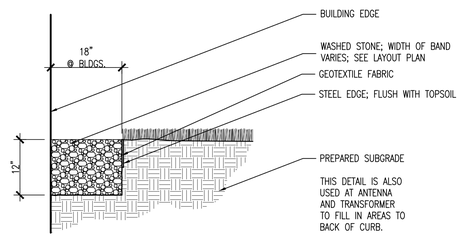
7 UNIT PAVER - FLEXIBLE BASE

SCALE: N.T.S.



8 FLUSH GRANITE CURB

SCALE: N.T.S.



9 WASHED STONE MOW STRIP

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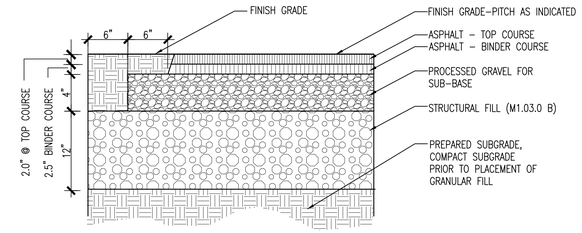
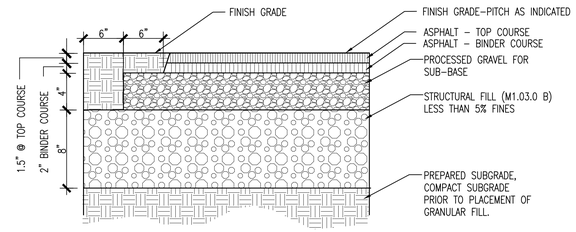


1 ASPHALT PAVEMENT - HEAVY DUTY

SCALE: N.T.S.



2 ASPHALT PAVEMENT - LIGHT DUTY

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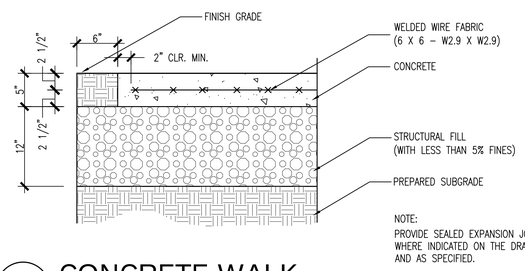
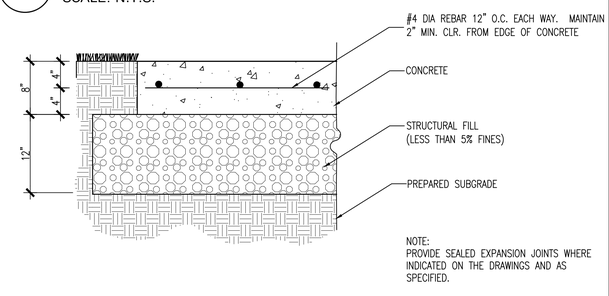


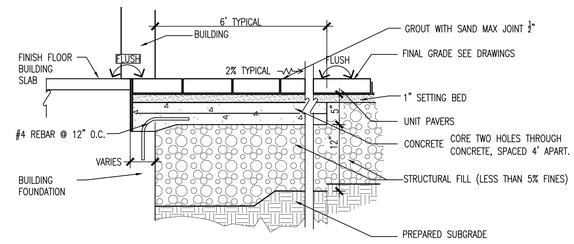
3 CONCRETE WALK

SCALE: N.T.S.



4 REINFORCED CONCRETE PAD

SCALE: N.T.S.



5 FLUSH HANDICAP ACCESSIBLE ENTRANCE - UNIT PAVERS

SCALE: N.T.S.

KAESTLE BOOS associates, inc

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REVISIONS

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KEY PLAN

0' 20' 40'
SCALE: 1" = 20'-0"
PROJECT TRUE

BEVERLY POLICE DEPARTMENT

175 Elliott Street Beverly, MA 01915

PROJECT NO.: 18028.00 DRAWN BY: Author

SITE DETAILS

DRAWING NO.:

L6.00

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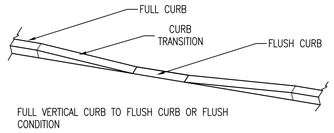

6 CURB TRANSITIONS

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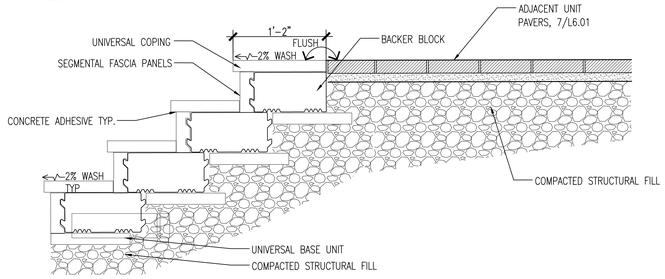
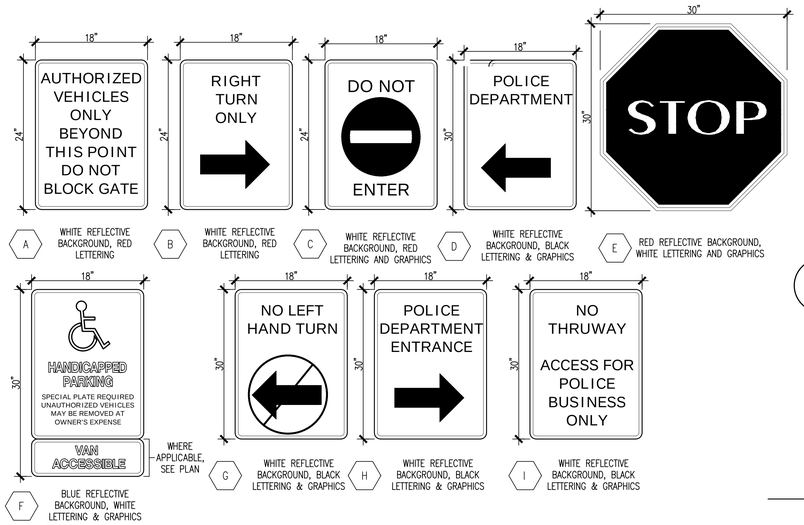


7 SEGMENTAL STAIRS

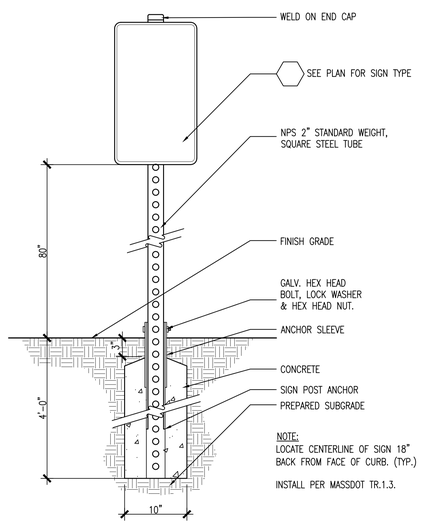
N.T.S.



8 PROJECT SIGNAGE

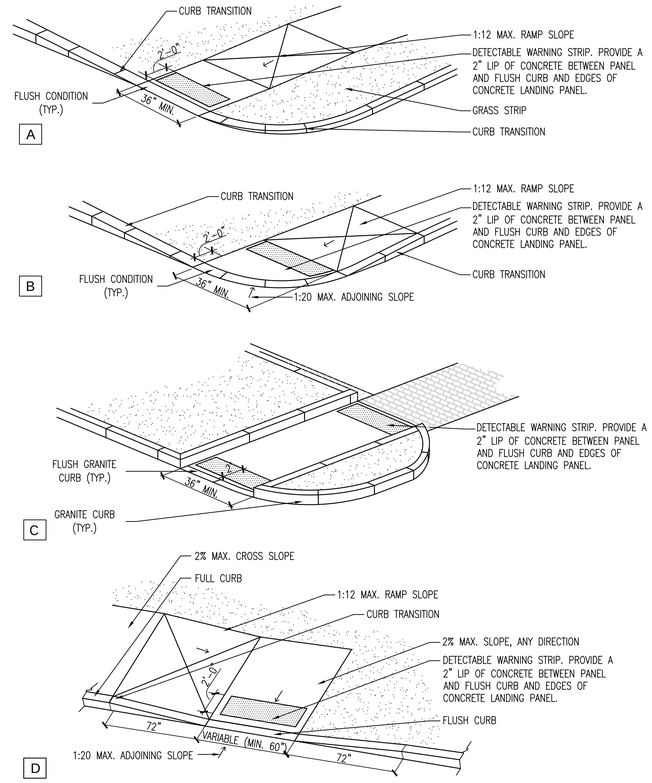
SCALE: N.T.S.

ALL SIGNS ON 8/L6.01 UNLESS OTHERWISE NOTED



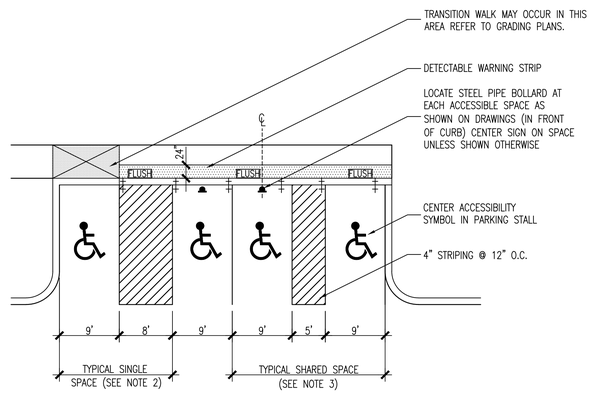
9 SIGN STANDARD

SCALE: N.T.S.



4 CURB CUT TYPES

SCALE: N.T.S.



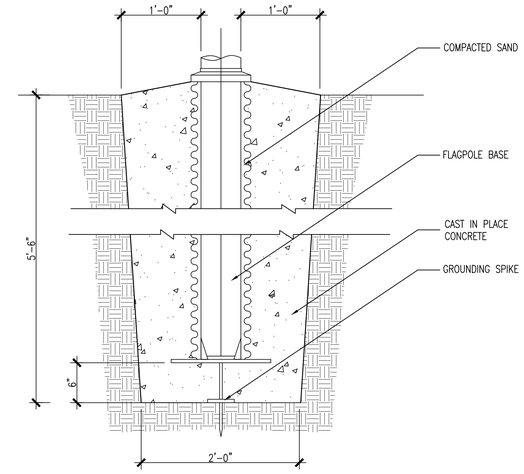
NOTES:

1. PITCH PAVEMENT NO MORE THAN A 2% SLOPE ANY DIRECTION
2. CROSS HATCH AISLE FOR SINGLE SPACE IS LOCATED ON THE RIGHT SIDE OF THE VEHICLE APPROACH. AISLE WIDTH IS 8' UNLESS VAN ACCESSIBILITY IS NOT REQUIRED AND THE PLANS INDICATE A WIDTH OF 5'.
3. SHARED PARKING SPACES SHALL ONLY BE PERMITTED WHERE A VEHICLE CAN BACK INTO EITHER SPACE FROM THE NORMAL VEHICULAR CIRCULATION PATTERN.

5 ACCESSIBLE PARKING SPACES

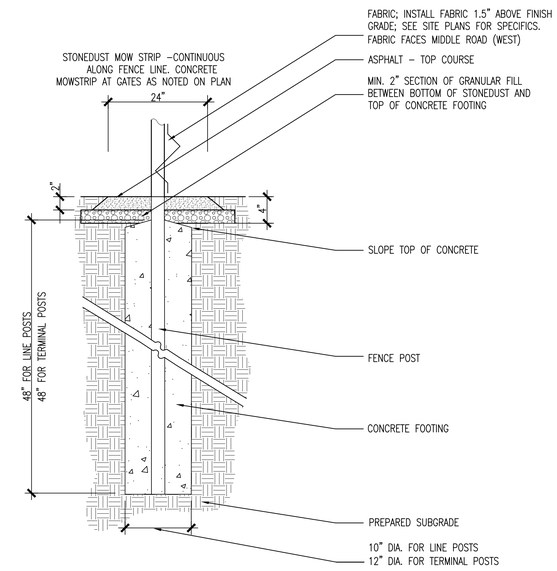
(W/ BOLLARD SIGNAGE) (MA STATE STANDARD)

SCALE: N.T.S.



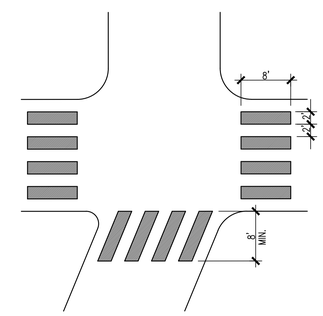
1 FLAGPOLE FOUNDATION

SCALE: N.T.S.



2 CHAIN LINK FENCE POST FOOTING & MOW STRIP

SCALE: N.T.S.



NOTES:

1. AT LOCATIONS WHERE THE CROSSWALK IS SKEWED, BARS TO BE PARALLEL TO AXIS OF TRAFFIC AND ENDS OF BARS TO BE PARALLEL. THE LENGTH OF THE BARS WILL VARY DEPENDING ON THE ANGLES OF SKEW.

2. BARS SHALL BE TYPICALLY NO CLOSER THAN 2' FROM CURBLINE/EDGE OF ROAD. ADJUST AS REQUIRED.

3 PEDESTRIAN CROSSWALK LAYOUT

SCALE: N.T.S.

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PROJECT NO.: 18028.00 DRAWN BY: Author

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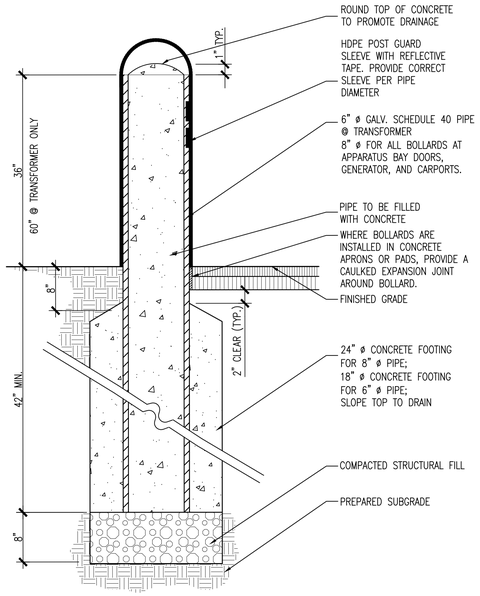
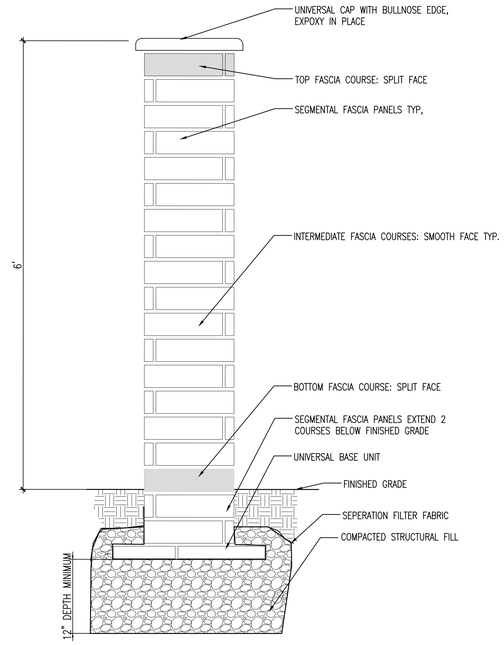


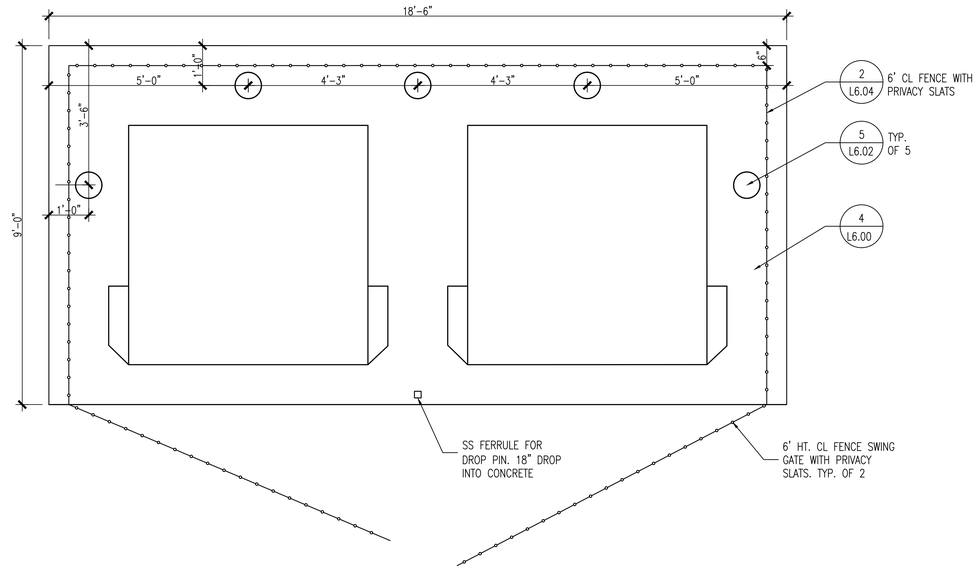
5 STEEL PIPE BOLLARD

SCALE: N.T.S.



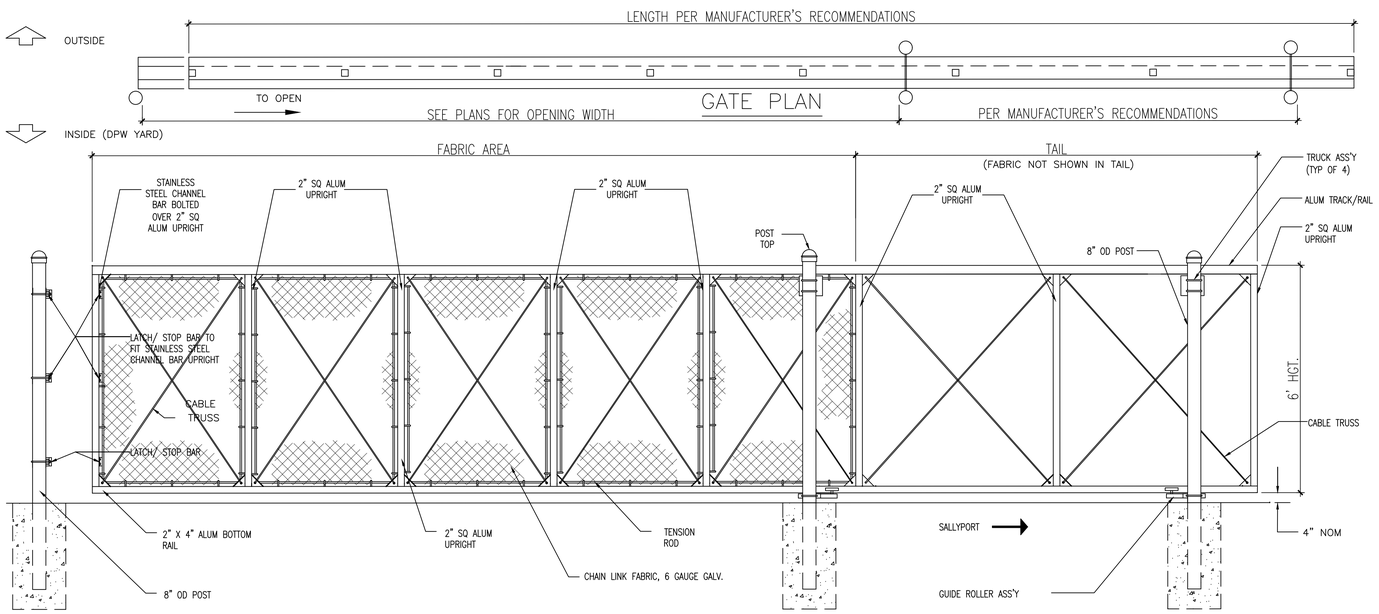
4 SEGMENTAL PILLAR

N.T.S.



1 DOUBLE DUMPSTER ENCLOSURE PLAN

SCALE: N.T.S.



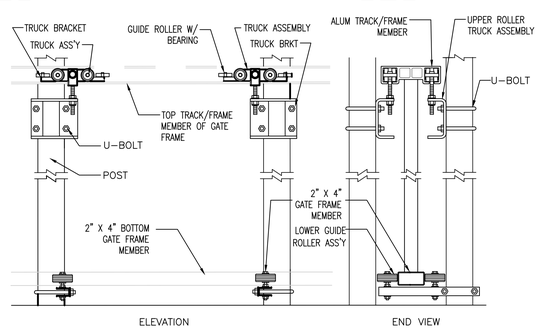
GATE ELEVATION – (5) BAYS SHOWN

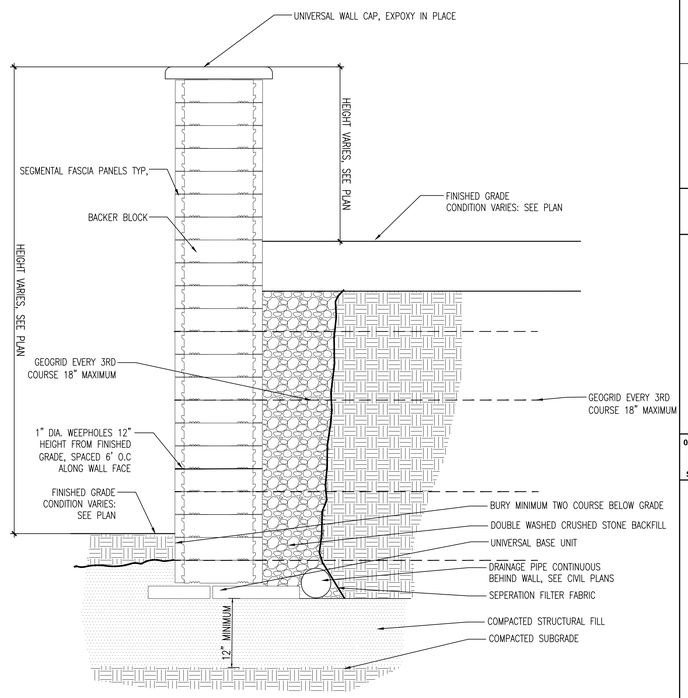
NOTES:

1. FOOTING WIDTH TO BE (4)X POST WIDTH. MIN DEPTH TO BE 48".
2. GATE SHALL BE ELECTRONICALLY OPERATED AND REMOTELY CONTROLLED BY THE DISPATCH AND AUTHORIZED VEHICLES. SEE SPECIFICATIONS FOR DETAILS.

6 CANTILEVERED SLIDING CHAIN LINK FENCE GATE

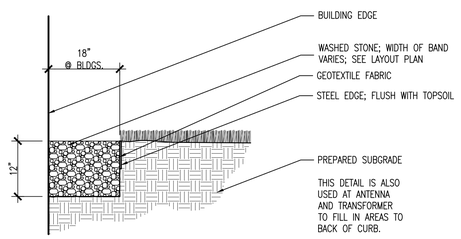
SCALE: N.T.S.





2 SEGMENTAL RETAINING WALL

N.T.S.



3 WASHED STONE MOW STRIP

SCALE: N.T.S.

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BEVERLY POLICE DEPARTMENT

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PROJECT NO.: 18028.00 DRAWN BY: Author

SITE DETAILS

DRAWING NO.: L6.02

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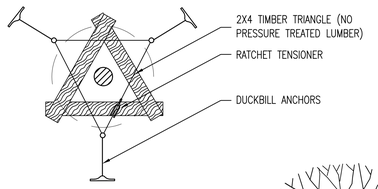
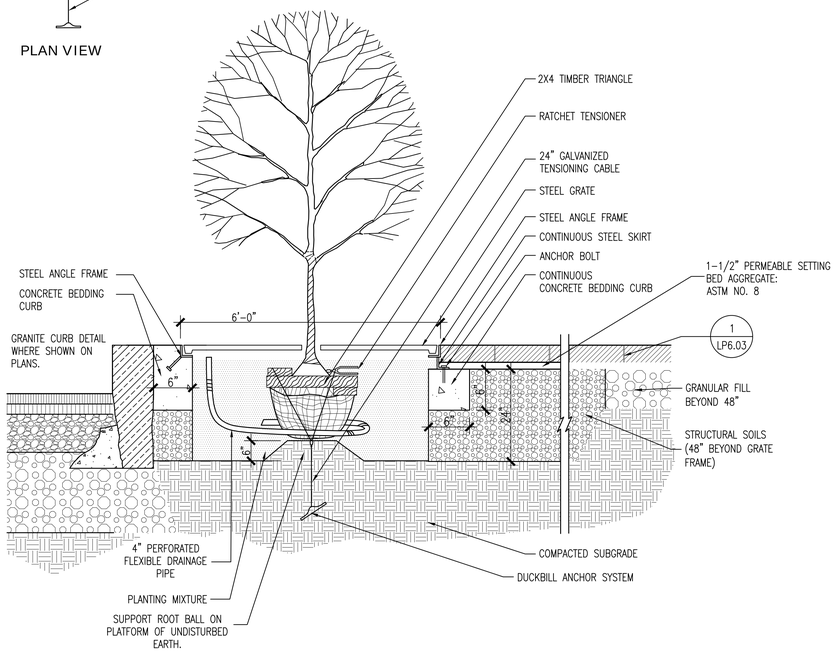


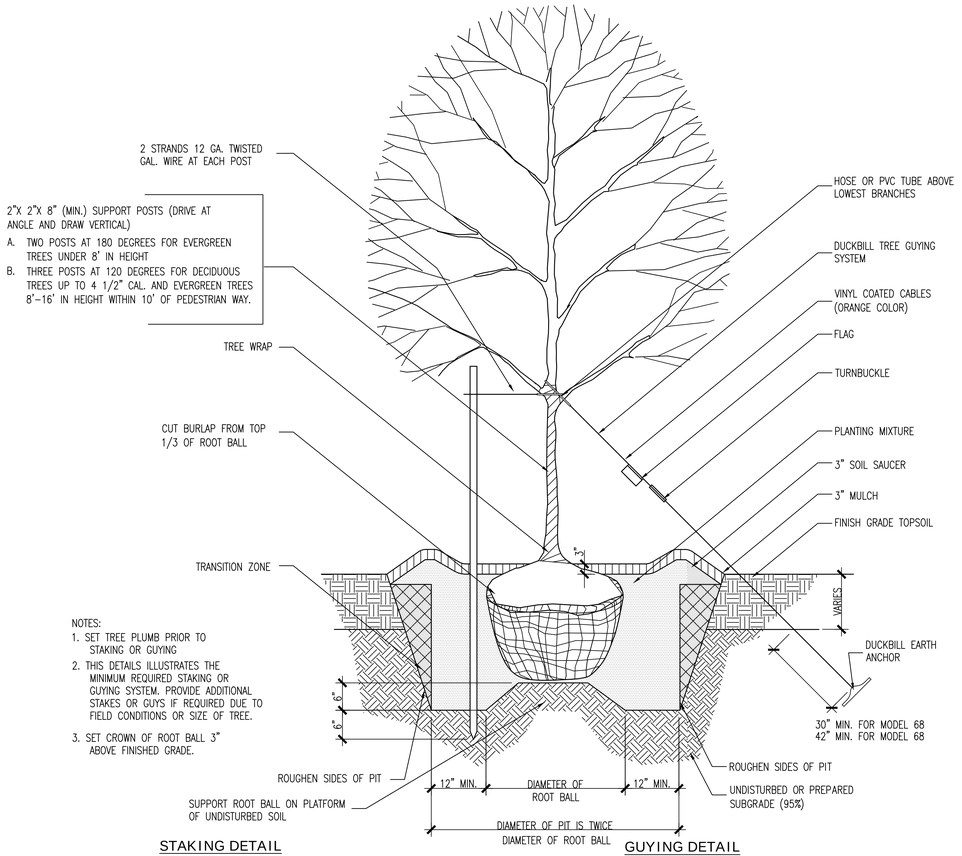
PLAN VIEW

NOTES:
1. TREES ARE TO BE SUPPORTED WITH UNDERGROUND SUPPORT SYSTEM TO HOLD ROOT BALL VERTICAL AND SECURELY IN PLACE.
2. WRAP PERFORATED FLEXIBLE DRAINAGE PIPE AROUND BASE OF TREE AND BRING ONE END TO SURFACE JUST BELOW TREE GRATE ELEVATION, OPEN END UP.



3 TREE GRATE

SCALE: N.T.S.



NOTES:
1. SET TREE PLUMB PRIOR TO STAKING OR GUYING
2. THIS DETAILS ILLUSTRATES THE MINIMUM REQUIRED STAKING OR GUYING SYSTEM. PROVIDE ADDITIONAL STAKES OR GUYS IF REQUIRED DUE TO FIELD CONDITIONS OR SIZE OF TREE.
3. SET CROWN OF ROOT BALL 3" ABOVE FINISHED GRADE.

STAKING DETAIL

FOR USE WITH:

A. DECIDUOUS TREES UNDER 3" CALIPER.
B. DECIDUOUS TREES 3"-4 1/2" CALIPER WHEN PLANTED WITHIN 10' OF PEDESTRIAN WAYS
C. EVERGREEN TREES UNDER 8' IN HEIGHT.
D. EVERGREEN TREES 8'-16' IN HEIGHT WHEN PLANTED WITHIN 10' OF PEDESTRIAN WAYS.

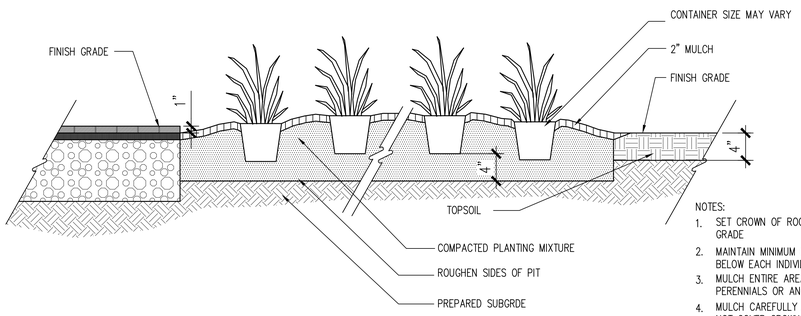
GUYING DETAIL

FOR USE WITH:

A. DECIDUOUS TREES 3"-4 1/2" CALIPER WHEN PLANTED GREATER THAN 10' OUTSIDE OF PEDESTRIAN WAYS.
B. DECIDUOUS TREE OVER 4 1/2" CALIPER.
C. EVERGREEN TREES 8'-16' IN HEIGHT WHEN PLANTED GREATER THAN 10' OUTSIDE OF PEDESTRIAN WAYS.
D. EVERGREEN TREES OVER 16' IN HEIGHT.

1 TREE PLANTING

SCALE: N.T.S.

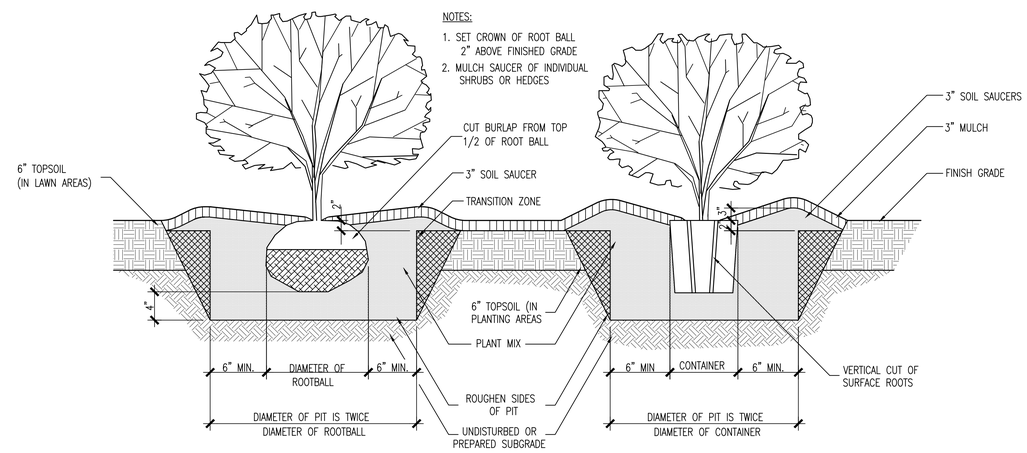


NOTES:
1. SET CROWN OF ROOT BALL LEVEL WITH FINISH GRADE
2. MAINTAIN MINIMUM OF 4" PLANTING MIXTURE BELOW EACH INDIVIDUAL PLANT.
3. MULCH ENTIRE AREA OF GROUNDCOVER, PERENNIALS OR ANNUALS
4. MULCH CAREFULLY AROUND EACH PLANT. DO NOT COVER CROWNS OF PLANTS WITH MULCH

4 GROUNDCOVER, PERENNIALS OR ANNUALS - CONTINUOUS PLANTING BED

SCALE: N.T.S.

NOTES:
1. SET CROWN OF ROOT BALL 2" ABOVE FINISHED GRADE
2. MULCH SAUCER OF INDIVIDUAL SHRUBS OR HEDGES



BALLED AND BURLAPPED MATERIAL

CONTAINER GROWN MATERIAL

2 SHRUB PLANTING

SCALE: N.T.S.

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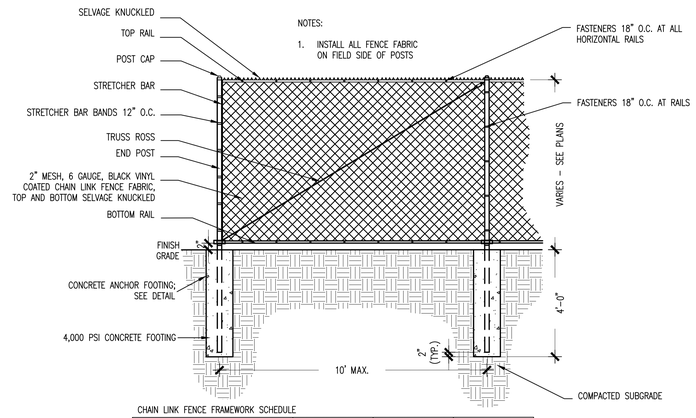


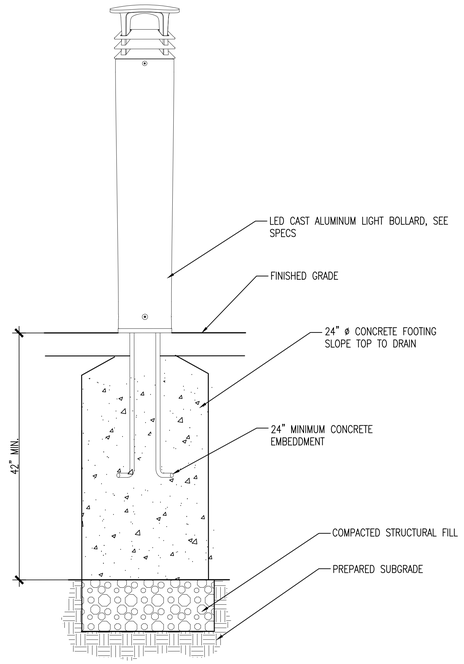
CHAIN LINK FENCE FRAMEWORK SCHEDULE

FABRIC HEIGHT	UP TO 4'	5' TO 6'	8' TO 10'
END, CORNER & PULL POST	2.375" O.D.	2.875" O.D.	3.5" O.D.
LINE POST	1.900" O.D.	2.375" O.D.	2.875" O.D.
TOP AND BOTTOM RAIL	1.660" O.D.	1.660" O.D.	1.660" O.D.
MIDDLE RAIL	NONE	NONE	1.660" O.D.
FOOTING	12" DIA.	12" DIA.	15" DIA.

INSTALL FENCE FABRIC ON FIELD SIDE OF FENCE UNLESS OTHERWISE NOTED

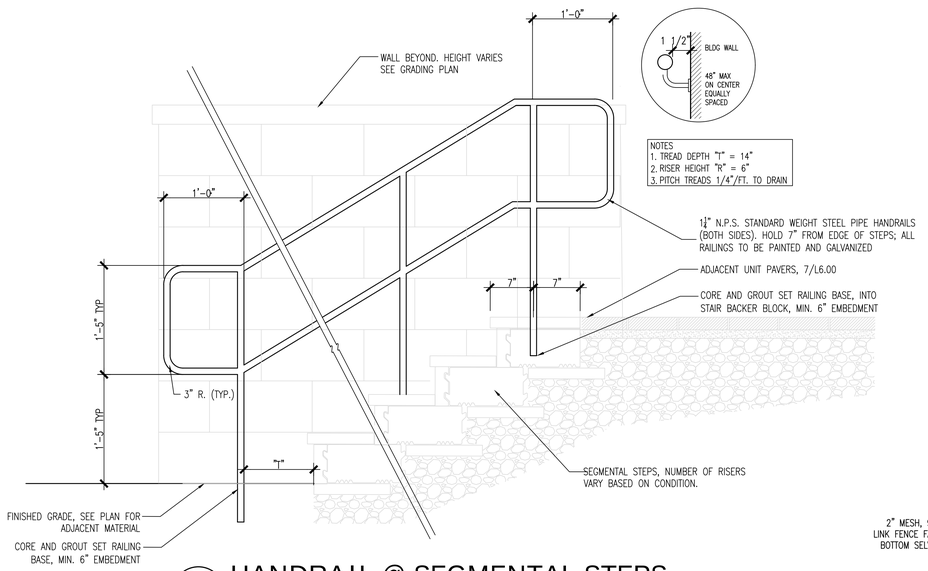
4 CHAIN LINK FENCE

NOT TO SCALE



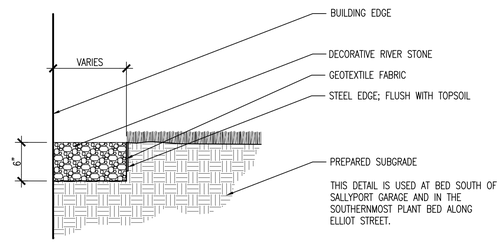
1 LED LIGHT BOLLARD

SCALE: N.T.S.



5 HANDRAIL @ SEGMENTAL STEPS

N.T.S.

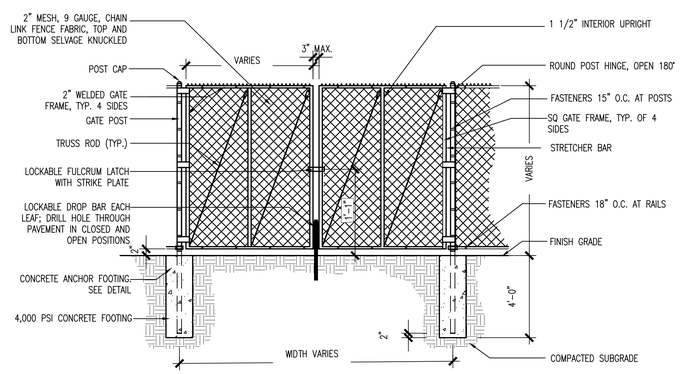


2 RIVER STONE SURFACING

SCALE: N.T.S.

NOTES:

1. INSTALL ALL FENCE FABRIC ON FIELD SIDE OF POSTS
2. REFER PLANS & DETAILS FOR GATE WIDTHS & HEIGHTS



CHAIN LINK GATE FRAMEWORK SCHEDULE

GATE LEAF DOUBLE LEAF	6'H OR LESS	>6'H – <12'H	12'H OR MORE
GATE POST	2.875" O.D.	4" O.D.	4" O.D.
GATE FRAME (4 SIDES)	2"	2.375"	2.375"
INTERIOR UPRIGHT	NONE	1 1/2"	2.375"
HEAVY DUTY HINGE	3 PER LEAF	3 PER LEAF	4 PER LEAF
FOOTING	12" DIA.	15" DIA.	15" DIA.

3 CHAIN LINK FENCE GATE - DOUBLE LEAF

NOT TO SCALE

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GENERAL NOTES:

1) THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF THE EXISTING UTILITIES AND STRUCTURES AS SHOWN ON THESE PLANS IS BASED ON THE RECORDS OF VARIOUS PLANS AND WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THIS INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE LOCATION OF ALL UNDERGROUND UTILITIES AND STRUCTURES SHALL BE VERIFIED IN THE FIELD PRIOR TO THE START OF CONSTRUCTION. THE CONTRACTOR MUST CONTACT THE APPROPRIATE UTILITY COMPANIES, GOVERNING PERMITTING AUTHORITIES, AND "DIG SAFE" AT LEAST 72 HOURS PRIOR TO ANY EXCAVATION WORK TO REQUEST EXACT FIELD LOCATION OF UTILITIES. THE ENGINEER OF RECORD SHALL BE NOTIFIED IN WRITING OF ANY UTILITIES INTERFERING WITH PROPOSED CONSTRUCTION AND APPROPRIATE REMEDIAL ACTION WILL BE TAKEN BY THE ENGINEER BEFORE THE CONTRACTOR PROCEEDS WITH THE WORK. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THESE PLANS.

2) THE CONTRACTOR SHALL BE RESPONSIBLE FOR HORIZONTAL AND VERTICAL CONTROL OF ALL SYSTEM COMPONENTS.

3) SAFETY MEASURES, DAY-TO-DAY CONTROL OF WORK AND CONSTRUCTION METHODS SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.

4) IN CASES WHERE LEDGE OR BOULDERS ARE PRESENT, THE ENGINEER WILL NOT BE RESPONSIBLE FOR ASSURING THE AMOUNT OF ROCK TO BE ENCOUNTERED.

5) GRADES, BOTH EXISTING AND FINISHED, ARE INDICATED ON DRAWINGS. THE LLC THAT WILL HOLD THE CONTRACT AND/OR ENGINEER ARE NOT RESPONSIBLE FOR EXISTING GRADES SHOWN ON DRAWINGS. CONTRACTOR SHALL CHECK ALL AREAS WHEREIN GRADES ARE SHOWN TO SATISFY HIMSELF AS TO ACTUAL CONDITIONS AND INCORPORATE ANY DISCREPANCIES DISCOVERED. CONTRACTOR SHALL BE RESPONSIBLE FOR ESTABLISHING ALL CONTROL POINTS AND MARKINGS NECESSARY FOR THE WORK. PRECAUTIONS SHALL BE TAKEN TO PRESERVE MATERIALS OUTSIDE THE LINE OF LIMIT OF WORK IN THE MOST UNDISTURBED CONDITIONS POSSIBLE.

6) THE CONTRACTOR SHALL BE RESPONSIBLE FOR DISPOSAL OF ALL WASTE MATERIAL AT AN APPROVED SITE. BURIAL OF WASTE MATERIAL ON-SITE IS NOT PERMITTED.

7) THE CONTRACTOR SHALL PROTECT ADJACENT PROPERTIES FROM ON-SITE CONSTRUCTION ACTIVITIES AND REMOVE ANY SEDIMENT OR DEBRIS DEPOSITED THEREON IMMEDIATELY.

8) DRAINAGE GENERATED AS A RESULT OF DEWATERING SHALL BE DISCHARGED TO EXISTING DRAINAGE COURSES WITH PROPER FILTRATION AND EROSION CONTROL MEASURES. DISCHARGE ONTO PAVEMENT OR PRIVATE PROPERTY SHALL NOT BE ALLOWED.

9) IF ANY PART OF THIS DESIGN IS TO BE ALTERED IN ANY WAY, THE ENGINEER AS WELL AS THE APPROVING AUTHORITIES SHALL BE NOTIFIED IN WRITING BEFORE CONSTRUCTION.

10) THE CONTRACTOR SHALL NOTIFY THE MUNICIPAL PLANNING AND ENGINEERING STAFF AT LEAST 48 HOURS PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.

11) UNLESS OTHERWISE NOTED, COMPACT ALL LAYERS TO 95 % MODIFIED PROCTOR.

EROSION CONTROL NOTES:

1) THE LIMIT OF THE WORK LINE FOR THE PROJECT SHALL BE THE SAME AS THE LIMIT OF THE WORK NECESSARY FOR GRADING OR UTILITY PURPOSES. NO WORK SHALL OCCUR BEYOND THESE LIMITS OR BEYOND THE LIMITS DEFINED BY THE HAYBALE/SILTFENCE.

2) ALL EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE MASSACHUSETTS EROSION AND SEDIMENT CONTROL GUIDELINES FOR URBAN AND SUBURBAN AREAS, DATED MARCH 1997, AS AMENDED, AND ALL LOCAL MUNICIPAL REGULATIONS.

3) EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE IN PLACE PRIOR TO THE COMMENCEMENT OF ANY SITE WORK OR EARTHWORK OPERATIONS AND SHALL BE MAINTAINED THROUGHOUT CONSTRUCTION, AND REMAIN IN PLACE, UNTIL ALL SITE WORK IS COMPLETE AND GROUND COVER IS ESTABLISHED.

4) ADDITIONAL EROSION CONTROL MEASURES MAY BE DEEMED NECESSARY BY THE ENGINEER OR THE MUNICIPALITY AT NO ADDITIONAL COST TO THE OWNER.

5) THE EROSION CONTROL MEASURES SHOWN ON THESE DRAWINGS ARE REPRESENTATIVE OF A SINGLE STAGE OF CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SITING, RELOCATION, AND AUGMENTATION OF EROSION CONTROL DEVICES INCLUDING HAYBALES, SILTFENCE, DRAINAGE SWALES, TEMPORARY SEDIMENTATIONS BASINS, CRUSHED STONE, ETC. THE CONTRACTOR SHALL ANTICIPATE AND MODIFY EROSION CONTROL MEASURES BASED ON PAST AND CURRENT WEATHER CONDITIONS, SEASON AND EXPECTED FUTURE CONSTRUCTION ACTIVITIES, AS THE PROJECT PROGRESSES AND SITE DRAINAGE CONDITIONS CHANGE. IN THE EVENT THAT INSUFFICIENCIES IN THE EROSION CONTROL PRACTICES ARE IDENTIFIED BY THE OWNER, OR AN AGENT FOR THE OWNER, THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING, SUPPLEMENTING, RELOCATION, OR OTHERWISE PROVIDING EROSION CONTROLS AS NECESSARY AT NO ADDITIONAL COST TO THE OWNER.

6) STOCKPILES SHALL BE SURROUNDED WITH STAKED HAYBALES AND/OR SILTATION FENCES TO PREVENT AND/OR CONTROL SILTATION AND EROSION. THE LOCATION OF THE STOCKPILE AREAS MAY BE MODIFIED AS APPROVED BY THE ON-SITE EROSION CONTROL MONITOR. TOPS OF STOCKPILES SHALL BE COVERED IN SUCH A MANNER THAT STORMWATER DOES NOT INFILTRATE THE MATERIALS AND THEREBY SUCCEED IN MAKING IT UNSUITABLE FOR FILL USE.

7) EARTHWORK ACTIVITY ON THE SITE SHALL BE DONE IN A MANOR SUCH THAT RUNOFF IS DIRECTED TO TEMPORARY DRAINAGE SWALES AND SEDIMENTATION BASINS.

8) FILTER BAGS SHALL BE PLACED AT ALL EXISTING & PROPOSED CATCH BASINS SUBJECT TO STORMWATER RUN-OFF FROM PROPOSED EARTHWORK AREAS DURING CONSTRUCTION, OR AS DIRECTED BY THE OWNER/ENGINEER. NO SEDIMENTS SHALL ENTER THE ON-SITE OR OFF-SITE DRAINAGE SYSTEM AT ANY TIME. FILTER BAGS SHALL BE ADS FLEXSTORM INLET FILTER WITH STAINLESS STEEL FRAME PER CITY OF BEVERLY ENGINEERING DEPARTMENT.

9) ALL EROSION CONTROL MEASURE SHALL BE ROUTINELY INSPECTED, CLEANED AND REPAIRED OR REPLACED AS NECESSARY THROUGHOUT ALL PHASES OF CONSTRUCTION. INSPECTIONS SHALL TAKE PLACE AT LEAST ONE A WEEK AT THE END OF THE WORKWEEK, PRIOR TO WEEKENDS AND WHEN PRECIPITATION IS FORECASTED. DEFICIENCIES OF ANY KIND SHALL BE CORRECTED PRIOR TO THE EXPECTED PRECIPITATION OR PRIOR TO LEAVING THE SITE FOR THE WEEKEND. INSPECTIONS SHALL ALSO OCCUR AFTER EACH RAINFALL EVENT OF GREATER THAN 0.5" OF RAINFALL AND DEFICIENCIES CORRECTED DURING THAT WORK DAY.

10) ALL PROPOSED SLOPES (EXCLUDING RIP-RAP SLOPES) STEEPER THAN 5:1 AND ALL SLOPES REGARDLESS OF SLOPE WITH AN OVERALL CHANGE IN GRADE GREATER THAN 10 FEET FROM TOP TO BOTTOM SHALL BE STABILIZED WITH EROSION CONTROL MATTING. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR ANY DAMAGE TO PROPOSED SLOPES (SLOUGHING, EROSION, ETC.) THAT RESULT DURING CONSTRUCTION, AND INSTALL EROSION CONTROL MATTING AS DIRECTED BY THE ARCHITECT/ENGINEER AT NO ADDITIONAL COST TO THE OWNER.

11) THE CONTRACTOR SHALL KEEP ON SITE AT ALL TIMES ADDITIONAL HAYBALES, EXTRA SILTATION FENCING, A STOCKPILE OF CRUSHED STONE, EXTRA FILTER BAGS OR ANY OTHER ITEM SPECIFIED HEREIN FOR EROSION/SEDIMENT CONTROL FOR INSTALLATION AT THE DIRECTION OF THE ENGINEER OR OWNER'S REPRESENTATIVE TO MITIGATE ANY EMERGENCY CONDITIONS.

12) THE AREA OR AREAS OF ENTRANCE AND EXIT SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT OFF OF THE PROJECT SITE. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED OFF THE PROJECT SITE MUST BE REMOVED IMMEDIATELY.

13) ANY DEWATERING REQUIRED ON THE SITE SHALL DISCHARGE INTO A TEMPORARY SILT REMOVAL BASIN.

14) STREET SWEEPING SHOULD BE CONDUCTED AT LEAST ONCE PER MONTH DURING THE LATE SPRING, SUMMER AND EARLY FALL SEASONS.

15) DUST GENERATED MUST BE MINIMIZED BY THE USE OF WATER TRUCKS AS NECESSARY. DURING CONSTRUCTION, DUST CONTROL ON MAJOR TRAVEL AREAS MAY USE CALCIUM CHLORIDE IN ACCORDANCE WITH SEC. 440 OF MASS. DEPART. OF PUBLIC WORKS STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES. THE USE OF CALCIUM CHLORIDE WILL BE COORDINATED WITH BCC OR THEIR DESIGNEE PRIOR TO APPLICATION. AREAS IN CLOSE PROXIMITY TO WETLANDS AND OF LESSER USE ARE TO BE TREATED WITH WATER FOR DUST CONTROL.

UTILITY NOTES:

1) ALL WATER LINES ARE TO BE INSTALLED WITH A MINIMUM OF FIVE FEET OF COVER AND A MAXIMUM OF SIX FEET OF COVER EXCEPT AS NOTED, DETAILED OTHERWISE, OR REQUIRED BY THE CONTROLLING MUNICIPAL AUTHORITY. A VARIATION IN THESE DEPTHS IS PERMITTED (IF ALLOWED BY CONTROLLING MUNICIPAL AUTHORITY) WHERE REQUIRED TO AVOID CONFLICTS WITH OTHER UTILITIES. HOWEVER, CONTRACTOR IS REQUIRED TO INSTALL WATER LINES AND APPURTENANCES IN ACCORDANCE WITH LOCAL REQUIREMENTS OF THE CONTROLLING MUNICIPAL AUTHORITY, INCLUDING BUT NOT LIMITED TO CLEARANCES, BEDDING, BACKFILL, INSULATION, ETC. ANY VARIATION FROM THE PLAN LAYOUT MUST BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO INSTALLATION.

2) GENERALLY, WATER LINE FITTINGS IDENTIFIED ON THESE DRAWINGS ARE SHOWN FOR INSTALLATION LOCATION PURPOSES. THE CONTRACTOR SHALL NOTE THAT NOT ALL FITTINGS REQUIRED FOR THE WORK ARE NOTED, SHOWN, OR INDICATED.

3) ALL WATER LINE FITTINGS, TEES, ETC. SHALL BE RESTRAINED WITH CONCRETE THRUST BLOCKS, MEGALUG RESTRAINED JOINTS, BOLTED-FLANGED CONNECTION OR TIE-RODS. PROVIDE JOINT RESTRATIN DETAILS TO ENGINEER PRIOR TO CONSTRUCTION FOR REVIEW AND APPROVAL. JOINT RESTRAINTS REQUIRED WITHIN 20' OF ALL BENDS, TEES, PLUGS, AND VALVES.

4) A MINIMUM OF 10 FEET CLEAR HORIZONTAL SPACE SHALL BE MAINTAINED BETWEEN SANITARY SEWER MAINS AND WATER MAINS. WHENEVER CONDITIONS PREVENT A LATERAL SEPARATION OF 10 FEET TO A WATER MAIN, THE WATER MAIN SHALL BE LAID IN A SEPARATE TRENCH AND THE ELEVATION THE CROWN OF THE SEWER SHALL BE AT LEAST 18 INCHES BELOW THE INVERT OF THE WATER MAIN.

5) ALL WATER MAINS 3" OR LARGER SHALL BE CEMENT LINED DUCTILE IRON – CLASS 52, AND SHALL BE INSTALLED WITH APPROPRIATELY SIZED FITTINGS AND GATE VALVES.

6) ALL WATER MAIN APPURTENANCES, MATERIALS, METHODS OF INSTALLATION AND TESTING REQUIREMENTS SHALL MEET OR EXCEED ALL LOCAL MUNICIPAL REQUIREMENTS.

7) PRESSURE AND LEAKAGE TEST, DISINFECTION AND FLUSHING SHALL BE IN ACCORDANCE WITH ALL LOCAL MUNICIPAL STANDARDS AND REQUIREMENTS. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COSTS IN CONNECTION WITH UTILITY TESTS, FLUSHING AND INSPECTION AS REQUIRED BY THE LOCAL MUNICIPALITY.

8) PRIMARY WATER METER AND BACKFLOW PREVENTED SHALL BE LOCATED AT THE POINT WHERE THE WATER LINE ENTERS THE BUILDING UNLESS OTHERWISE NOTED OR DETAILED ON THE DRAWINGS.

10) ALL GRAVITY SEWER PIPES SHALL BE POLYVINYL CHLORIDE PIPE (PVC) SDR35 UNLESS NOTED OTHERWISE.

11) WHERE WATER MAINS CROSS OVER SEWER LINES WITH LESS THAN 18" VERTICAL CLEARANCE, AND WHERE WATER MAINS AND SERVICES CROSS BENEATH SEWER LINES, SEWER LINE AND WATER LINE SHALL BE CAREFULLY ENCASED IN CONCRETE. ENCASEMENT SHALL EXTEND FROM PIPE SURFACES A MINIMUM DISTANCE OF 8" ALL AROUND AND ENCASEMENT SHALL EXTEND ALONG EACH PIPE A MINIMUM DISTANCE OF 10 FEET FROM THE OTHER PIPE AS MEASURED NORMALLY FROMM ALL POINTS ALONG THE PIPES.

12) PROPOSED SEWER SERVICES SHALL BE 6" SDR35 PVC PIPE WITH A MINIMUM SLOPE OF 0.02 FT/FT.

13) PROPOSED GAS SERVICE LOCATIONS SHALL BE DETERMINED BY THE GAS COMPANY. THE CONTRACTOR SHALL CONFIRM WITH THE GAS COMPANY THAT GAS LINES INSTALLATIONS SHALL BE BY THE LOCAL GAS COMPANY. THE CONTRACTOR SHALL GIVE THE GAS COMPANY ADVANCE NOTICE OF WHEN THE GAS LINE CAN BE INSTALLED. THE CONTRACTOR IS RESPONSIBLE FOR ALL COORDINATION, EXCAVATION, BACKFILL AND E COMPACTION FOR THE GAS LINE.

14) ELECTRICAL AND TELEPHONE SERVICES SHALL BE COORDINATED AND SCHEDULED WITH THE APPROPRIATE UTILITY COMPANY SERVICING THE PROJECT SITE.

15) THE PRIMARY ELECTRICAL AND TELEPHONE DISTRIBUTION SYSTEMS ARE SHOWN GRAPHICALLY FOR COORDINATION PURPOSES. ALL ASPECTS OF THE THESE SERVICES SHALL BE DESIGN/BUILD BY THE CONTRACTOR IN ACCORDANCE WITH ALL LOCAL, STATE, FEDERAL, AND UTILITY COMPANY STANDARDS AND CODES. ALL COSTS AND FEES ASSOCIATED WITH PROVIDING THESE SERVICES INCLUDING BUT NOT LIMITED TO FURNISHING AND INSTALLING ALL STRUCTURES, EQUIPMENT, CONDUIT, WIRING, POLES, TRANSFORMERS, PADS, PERMITS, EASEMENTS, ETC. NECESSARY TO BRING THESE SERVICES TO THE BUILDING SHALL BE COORDINATED WITH THE OWNER AND IS THE RESPONSIBILITY OF THE CONTRACTOR UNLESS SPECIFIC ARRANGEMENTS ARE MADE WITH THE OWNER IN WRITING PRIOR TO ACCEPTANCE OF THE BID. THE BUILDING CONTRACTOR WILL BE RESPONSIBLE FOR INSTALLING WIRES AND CONDUIT FROM 10' OUTSIDE THE BUILDING TO THE BUILDING ELECTRICAL ROOM.

16) ALL PIPING WITHIN 10' OF THE BUILDING SHALL CONFORM TO MASSACHUSETTS BUILDING CODE, PLUMBING CODE, OR ELECTRICAL CODE, AS APPROPRIATE.

17) ALL UTILITY WORK TO MEET CITY OF BEVERLY OR UTILITY PROVIDER REQUIREMENTS. CONTRACTOR TO COORDINATE WITH UTILITY COMPANY AS NEEDED TO ENSURE FUNCTIONING, COMPLIANT SYSTEMS ARE INSTALLED IN A TIMELY MANNER.

REFERENCES:

1) OWNER OF RECORD: CITY OF BEVERLY
ESRD BK. 16902, PG. 287
PARCEL ID: 19-128

2) ESRD RECORD PLANS:
- PLAN BOOK 351, PLAN 70
- PLAN BOOK 453, PLAN 32

3) SUBDIVISION PLAN OF LAND BY GRIFFIN ENGINEERING AND GRE SURVEYING DATED 02-13-01, LAND COURT PLAN 42597A.

4) SUBJECT PROPERTY IS LOCATED IN ZONING DISTRICT "IG".

5) CITY OF BEVERLY FEMA FLOOD INSURANCE RATE MAP (MAP #25009C0417G, JULY 16, 2014) INDICATES THAT THE SITE IS LOCATED WITHIN A ZONE AE WITH BASE ELEVATION OF 10-FT.

6) EXISTING CONDITIONS PLAN BY TAJ ENGINEERING, LLC DATED DECEMBER 19, 2018.

7) ELEVATIONS ARE BASED ON NAVD 1988. EXISTING TOPOGRAPHY IS BASED ON AN ACTUAL FIELD SURVEY BY TAD ENGINEERING, LLC IN NOVEMBER AND DECEMBER 2018.

L E G E N D

EXISTING

- PROPERTY LINE
- 100-YR FLOOD PLAIN
- 8 — CONTOUR
- 12.5 × SPOT GRADE
- TC 9.4 TOP OF CURB GRADE
- BC 9.2 BOTTOM OF CURB GRADE
- BUILDING
- EDGE OF PAVEMENT
- VGC VERICAL GRANITE CURB
- SGC SLOPED GRANITE CURB
- GRAVEL
- CHAINLINK FENCE
- E OVERHEAD WIRES
- S SEWER LINE
- S SMH SEWER MANHOLE
- G GAS LINE
- W WATER LINE
- WV WATER GATE
- GG GAS GATE
- HYDRANT
- E ELECTRIC MANHOLE
- E ELECTRIC CONDUIT
- PB ELECTRIC PULL BOX
- TRAFFIC LIGHT
- PEDESTRIAN WALK LIGHT
- T TELEPHONE MANHOLE
- T TELEPHONE CONDUIT
- CATV CABLE TELEVISION CONDUIT
- D DRAIN LINE
- CB CATCH BASIN
- D DMH DRAIN MANHOLE
- LIGHT POST
- FOD FULL OF DIRT
- SBDH(FND) STONE BOUND DRILL HOLE
- CONIFEROUS TREE
- DECIDUOUS TREE
- EASEMENT LINE

PROPOSED

- PROP. BUILDING
- PROP. CURBING
- D PROP. DRAIN LINE
- D PDMH9 PROP. DRAIN MANHOLE
- CB PCB8 PROP. CATCH BASIN
- D WQS2 PROP. WATER QUALITY STRUCTURE
- AD1 PROP. AREA DRAIN
- PROP. TRENCH DRAIN
- E PROP. ELECTRIC CONDUIT
- CATV PROP. CABLE TELEVISION CONDUIT
- T PROP. TELEPHONE CONDUIT
- S PROP. SEWER LINE
- S PSMH PROP. SEWER MANHOLE
- W PROP. WATER LINE
- FP PROP. FIRE PROTECTION LINE
- G PROP. GAS SERVICE
- 12 PROP. CONTOUR
- +12.29 PROP. SPOT GRADE
- RUNOFF FLOW DIRECTION
- FLUSH SYMBOL

DEMOLITION

- T.B.R. TO BE REMOVED
- SAW CUT
- PIPE TO BE REMOVED OR ABANDONED
- T.B.R. CUT AND CAP UTILITY PIPE SYMBOL

EROSION CONTROL

- G CONSTRUCTION FENCE
- G EROSION CONTROL
- CATCH BASIN SILT SACK
- CONSTRUCTION ENTRANCE

INDEX OF CIVIL DRAWINGS

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PHASE I	C2.01	PHASE I EROSION CONTROL & DEMOLITION PLAN
PHASE I	C2.02	PHASE I DETAILS
PHASE I	C2.03	PHASE I AS-BUILT
PHASE II	C3.00	SEDIMENTATION & EROSION CONTROL PLAN
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PHASE II	C7.00	DETAILS I
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PHASE II	C8.00	TEMPORARY CONSTRUCTION EASEMENT
PHASE II	C8.01	PERMANENT ACCESS & UTILITY EASEMENTS

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ISSUE DATE

DATE	DESCRIPTION
4/29/2019	SD COST ESTIMATE
7/19/2019	DESIGN DEVELOPMENT SUBMISSION
AUGUST 12, 2019	PLANNNING BOARD SUBMISSION

REVISIONS

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

BEVERLY POLICE STATION
175 ELLIOTT ST.
BEVERLY, MA

PROJECT NO.: 18028.00 DRAWN BY: MP

NOTES & LEGEND

DRAWING NO.:
C1.00

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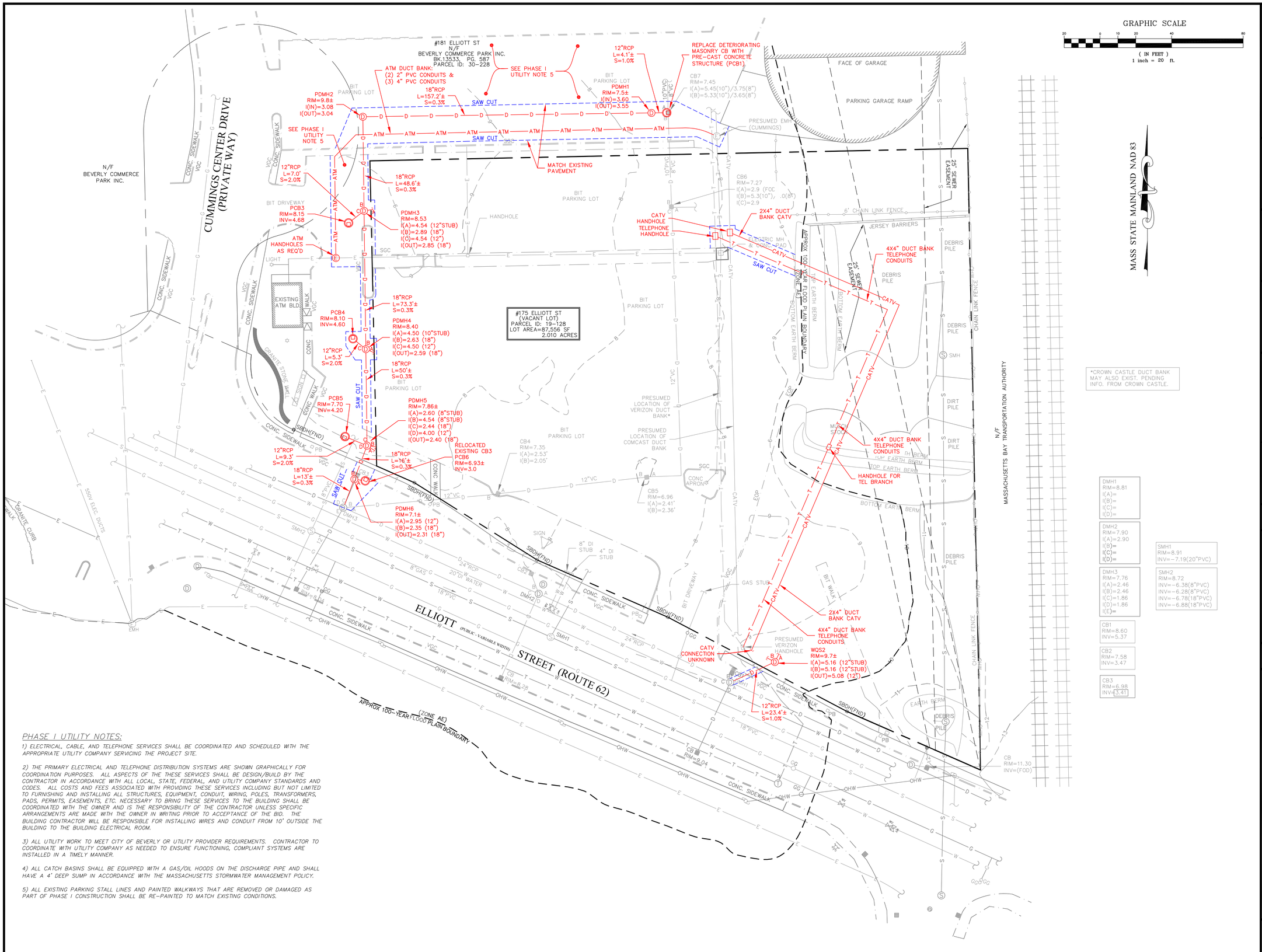

PHASE I UTILITY NOTES:

1) ELECTRICAL, CABLE, AND TELEPHONE SERVICES SHALL BE COORDINATED AND SCHEDULED WITH THE APPROPRIATE UTILITY COMPANY SERVICING THE PROJECT SITE.

2) THE PRIMARY ELECTRICAL AND TELEPHONE DISTRIBUTION SYSTEMS ARE SHOWN GRAPHICALLY FOR COORDINATION PURPOSES. ALL ASPECTS OF THE THESE SERVICES SHALL BE DESIGN/BUILD BY THE CONTRACTOR IN ACCORDANCE WITH ALL LOCAL, STATE, FEDERAL, AND UTILITY COMPANY STANDARDS AND CODES. ALL COSTS AND FEES ASSOCIATED WITH PROVIDING THESE SERVICES INCLUDING BUT NOT LIMITED TO FURNISHING AND INSTALLING ALL STRUCTURES, EQUIPMENT, CONDUIT, WIRING, POLES, TRANSFORMERS, PADS, PERMITS, EASEMENTS, ETC. NECESSARY TO BRING THESE SERVICES TO THE BUILDING SHALL BE COORDINATED WITH THE OWNER AND IS THE RESPONSIBILITY OF THE CONTRACTOR UNLESS SPECIFIC ARRANGEMENTS ARE MADE WITH THE OWNER IN WRITING PRIOR TO ACCEPTANCE OF THE BID. THE BUILDING CONTRACTOR WILL BE RESPONSIBLE FOR INSTALLING WIRES AND CONDUIT FROM 10' OUTSIDE THE BUILDING TO THE BUILDING ELECTRICAL ROOM.

3) ALL UTILITY WORK TO MEET CITY OF BEVERLY OR UTILITY PROVIDER REQUIREMENTS. CONTRACTOR TO COORDINATE WITH UTILITY COMPANY AS NEEDED TO ENSURE FUNCTIONING, COMPLIANT SYSTEMS ARE INSTALLED IN A TIMELY MANNER.

4) ALL CATCH BASINS SHALL BE EQUIPPED WITH A GAS/OIL HOODS ON THE DISCHARGE PIPE AND SHALL HAVE A 4' DEEP SUMP IN ACCORDANCE WITH THE MASSACHUSETTS STORMWATER MANAGEMENT POLICY.

5) ALL EXISTING PARKING STALL LINES AND PAINTED WALKWAYS THAT ARE REMOVED OR DAMAGED AS PART OF PHASE I CONSTRUCTION SHALL BE RE-PAINTED TO MATCH EXISTING CONDITIONS.

SHEET NOTES:

1) SEE SHEET C1.00 FOR LEGEND, GENERAL NOTES, EROSION CONTROL NOTES, UTILITY NOTES, REFERENCES, AND INDEX OF CIVIL DRAWINGS.

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PROJECT NO.: 18028.00 DRAWN BY: MP

PHASE I UTILITY RELOCATION

DRAWING NO.:
C2.00

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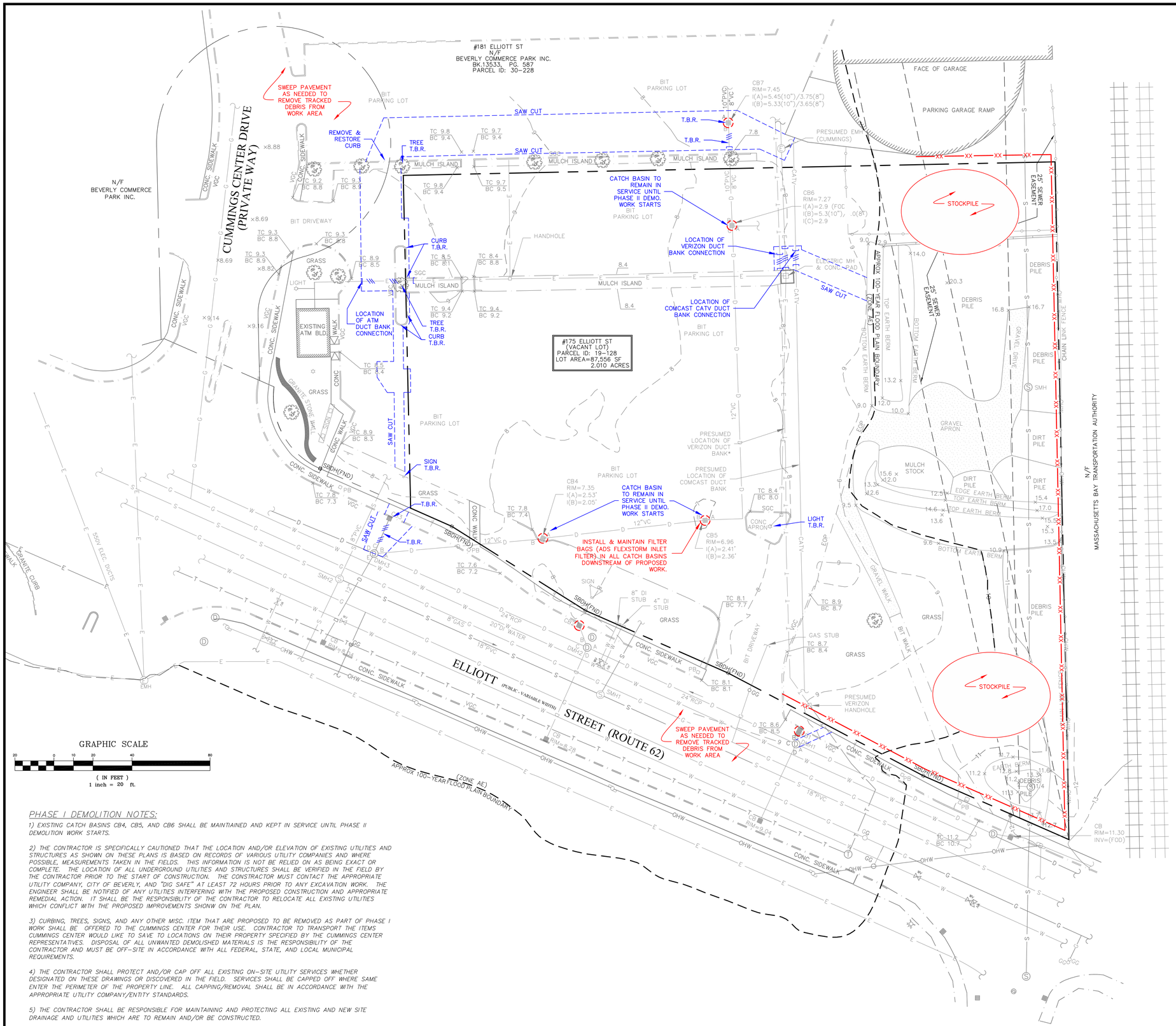

PHASE I DEMOLITION NOTES:

1) EXISTING CATCH BASINS CB4, CB5, AND CB6 SHALL BE MAINTAINED AND KEPT IN SERVICE UNTIL PHASE II DEMOLITION WORK STARTS.

2) THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AND STRUCTURES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF VARIOUS UTILITY COMPANIES AND WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELDS. THIS INFORMATION IS NOT BE RELIED ON AS BEING EXACT OR COMPLETE. THE LOCATION OF ALL UNDERGROUND UTILITIES AND STRUCTURES SHALL BE VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO THE START OF CONSTRUCTION. THE CONSTRACTOR MUST CONTACT THE APPROPRIATE UTILITY COMPANY, CITY OF BEVERLY, AND "DIG SAFE" AT LEAST 72 HOURS PRIOR TO ANY EXCAVATION WORK. THE ENGINEER SHALL BE NOTIFIED OF ANY UTILITIES INTERFERING WITH THE PROPOSED CONSTRUCTION AND APPROPRIATE REMEDIAL ACTION. IT SHALL BE THE RESPONSIBLITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHONW ON THE PLAN.

3) CURBING, TREES, SIGNS, AND ANY OTHER MISC. ITEM THAT ARE PROPOSED TO BE REMOVED AS PART OF PHASE I WORK SHALL BE OFFERED TO THE CUMMINGS CENTER FOR THEIR USE. CONTRACTOR TO TRANSPORT THE ITEMS CUMMINGS CENTER WOULD LIKE TO SAVE TO LOCATIONS ON THEIR PROPERTY SPECIFIED BY THE CUMMINGS CENTER REPRESENTATIVES. DISPOSAL OF ALL UNWANTED DEMOLISHED MATERIALS IS THE RESPONSIBILITY OF THE CONTRACTOR AND MUST BE OFF-SITE IN ACCORDANCE WITH ALL FEDERAL, STATE, AND LOCAL MUNICIPAL REQUIREMENTS.

4) THE CONTRACTOR SHALL PROTECT AND/OR CAP OFF ALL EXISTING ON-SITE UTILITY SERVICES WHETHER DESIGNATED ON THESE DRAWINGS OR DISCOVERED IN THE FIELD. SERVICES SHALL BE CAPPED OFF WHERE SAME ENTER THE PERIMETER OF THE PROPERTY LINE. ALL CAPPING/REMOVAL SHALL BE IN ACCORDANCE WITH THE APPROPRIATE UTILITY COMPANY/ENTITY STANDARDS.

5) THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING AND PROTECTING ALL EXISTING AND NEW SITE DRAINAGE AND UTILITIES WHICH ARE TO REMAIN AND/OR BE CONSTRUCTED.

6) INVERTS OF EXISTING DRAIN PIPES TO BE ABANDONED IN EXISTING DRAINAGE STRUCTURES TO REMAIN SHALL BE SEALED BY USING BRICKS AND MORTOR, OR PLUGS/CAPS AVAILABLE FROM PIPE SUPPLIERS.

7) ALL PIPES OR CONDUITS TO BE ABANDONED SHALL BE PLUGGED WITH BRICK AND MORTAR.

8) EXISTING ELECTRIC, TELEPHONE, AND CATV CONDUITS LOCATED ON-SITE PROVIDING SERVICE TO THE COMMINGS CENTER AND ATM BUILDING SHALL NOT BE ABANDONED OR REMOVED UNTIL THE PROPOSED CONDUITS FOR THESE SERVICES HAVE BEEN INSTALLED AND READY TO CONNECT TO THE EXISTING CONDUITS.

9) UTILITIES TO BE REMOVED (T.B.R.): COMPLETELY REMOVE PIPE AND APPURTENANT STRUCTURES; BACKFILL EXCAVATED VOID WITH DENSE CRADED CRUSHED STONE (MHD, M2.01.7); COMPACT THOROUGHLY IN 12" THICKNESS LIFTS TO MAINTAIN 95% MODIFIED PROCTOR DENSITY.

SHEET NOTES:

1) SEE SHEET C1.00 FOR LEGEND, GENERAL NOTES, EROSION CONTROL NOTES, UTILITY NOTES, REFERENCES, AND INDEX OF CIVIL DRAWINGS.

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PROJECT NO.: 18028.00 DRAWN BY: MP

PHASE I
EROSION CONTROL & DEMOLITION PLAN

DRAWING NO.:
C2.01

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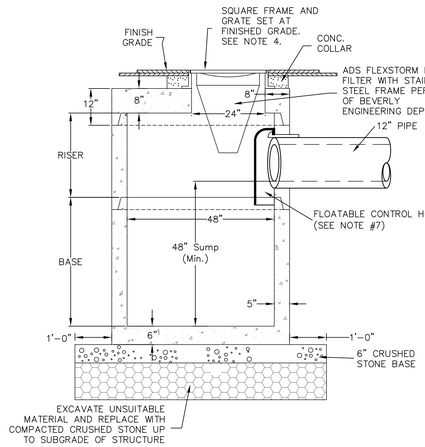
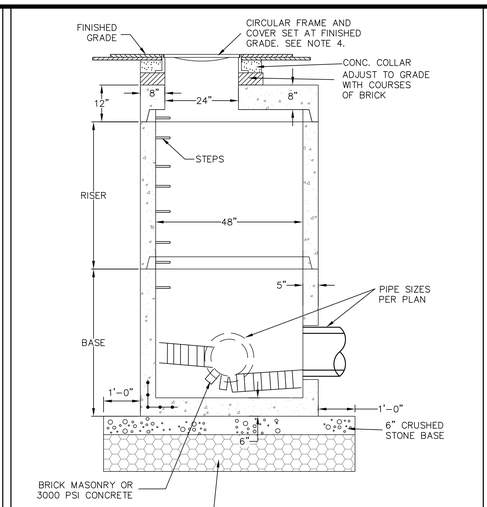


NOTES:
1. CONCRETE 4,000 PSI MINIMUM AFTER 28 DAYS.
2. REINFORCED STEEL SHALL CONFORM TO LATEST ASTM A185 SPEC. 0.12 SQ. IN./LINEAL FT. AND 0.12 SQ. IN. (BOTH WAYS) BASE BOTTOM.
3. H-20 DESIGN LOADING.
4. EAST JORDAN IRON WORKS, INC FRAME & GRATE (MA554000002) OR APPROVED EQUIVALENT.
5. SHEA PRECAST OR APPROVED EQUIVALENT.
6. TONGUE & GROOVE JOINTS SEALED WITH BUTYL RESIN. BUTYL RESIN.
7. FLOATABLE CONTROL HOOD SHALL BE THE "SNOUT" (MANUFACTURED BY BMP, INC, LYME, CT) OR APPROVED EQUAL SUCH AS R-3701 HOOD (MANUFACTURED BY NEENAH FOUNDRY, INC., NEENAH, WI) OR "ELIMINATOR" (MANUFACTURED BY GROUNDWATER RESCUE, INC., QUINCY, MA).

4-ft DIA. PRECAST CATCH BASIN

SCALE: N.T.S.

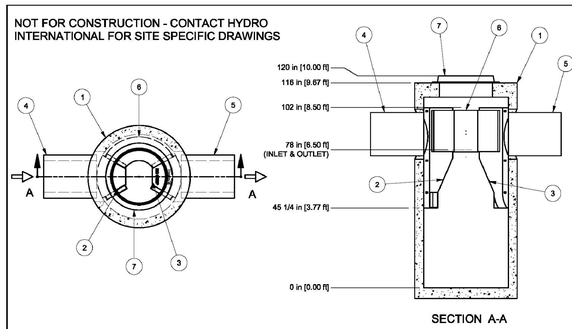


NOTES:
1. CONCRETE 4,000 PSI MINIMUM AFTER 28 DAYS.
2. REINFORCED STEEL SHALL CONFORM TO LATEST ASTM A185 SPEC. 0.12 SQ. IN./LINEAL FT. AND 0.12 SQ. IN. (BOTH WAYS) BASE BOTTOM.
3. H-20 DESIGN LOADING.
4. H-20 RATED CAST IRON FRAME AND COVER.
5. SHEA PRECAST OR APPROVED EQUIVALENT.
6. TONGUE & GROOVE JOINTS SEALED WITH BUTYL RESIN. BUTYL RESIN.

TYPICAL 4'ø PRECAST DRAIN MANHOLE

SCALE: N.T.S.

NOT FOR CONSTRUCTION - CONTACT HYDRO INTERNATIONAL FOR SITE SPECIFIC DRAWINGS



Notes
1. MANHOLE WALL AND SLAB THICKNESSES ARE NOT TO SCALE.
2. CONTACT HYDRO INTERNATIONAL FOR A BOTTOM OF STRUCTURE ELEVATION PRIOR TO SETTING FIRST DEFENSE MANHOLE.
3. CONTRACTOR TO CONFIRM R.IM, PIPE INVERTS, PIPE DIA. AND PIPE ORIENTATION PRIOR TO RELEASING UNIT TO FABRICATION.

REV	BY	DATE	DESCRIPTION
			FIRST ISSUE

REVISION HISTORY

Date	Scale
11/1/2011	5/16" = 1'0"

Drawn	Checked	Approved
EMH	MRJ	MRJ

Title
4-FT DIAMETER FIRST DEFENSE

GENERAL ARRANGEMENT

Hydro International stormwater

94 Hutchins Drive
Portland, Maine 04102
Tel: (207) 756-6200
Fax: (207) 756-6212
stormwaterinquiry@hil-tech.com

CAPACITIES:
1. PEAK HYDRAULIC FLOW: 6.0 cfs (170 l/s)
2. TREATMENT FLOW: 0.7 cfs (20 l/s)
3. SEDIMENT STORAGE CAPACITY: 1 cu. yd. (0.76 cu. m.)
4. OIL STORAGE CAPACITY: 180 gal. (681 liters)

ADDITIONAL DESIGN INFORMATION:
1. MAXIMUM INLET/OUTLET PIPE DIAMETERS: 18 in.
2. MAXIMUM NUMBER OF INLET PIPES: 2
3. MINIMUM ANGLE BETWEEN PIPES: 90 DEGREES

Parts List

ITEM	SIZE (in)	DESCRIPTION
1	48	I.D. CONCRETE MANHOLE
2		INLET CHUTE (W/ FLOATABLES TRAP)
3		OUTLET CHUTE
4	18	INLET PIPE (BY OTHERS)
5	18	OUTLET PIPE (BY OTHERS)
6		HIGH FLOW BYPASS
7	30	FRAME AND COVER (OR GRATE)

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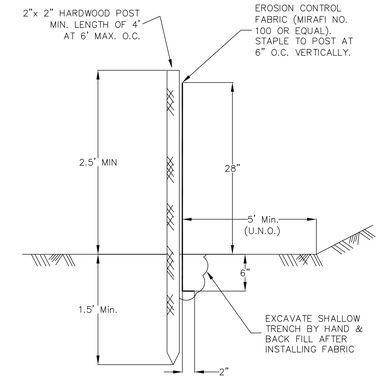
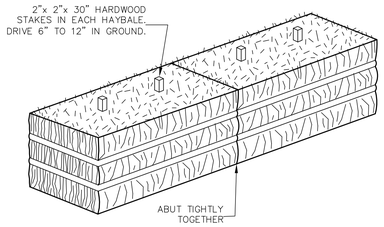
CAD Ref: F4G3A
Project No.
Drawing No. F4G3A Rev.

WATER QUALITY STRUCTURE

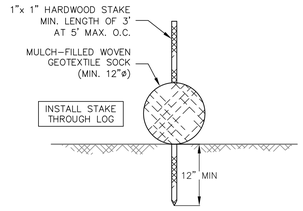
SCALE: N.T.S.



SILT FENCE



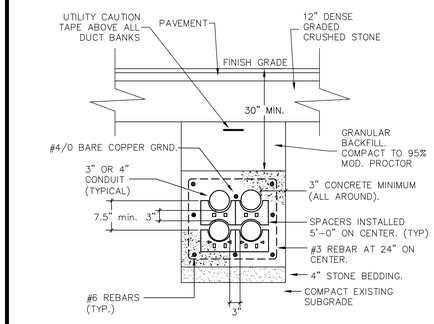
HAYBALE



STRAW WATTLE OR SILT SOCK

EROSION CONTROL

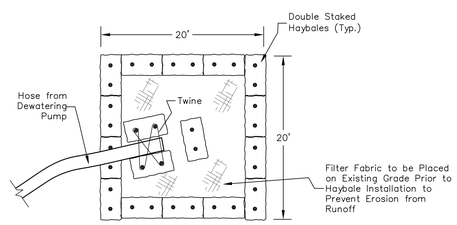
SCALE: N.T.S.



NOTES:
1) DIMENSIONS SHOWN ARE TYPICAL DUCT BANK CONFIGURATIONS.
2) CONDUIT SHALL BE SCH. 40 PVC, PROVIDED WITH PULLING WIRE ONLY. CABLE BY OTHERS.
3) CONDUITS SHALL BE PLUGGED WITH PASTIC CAPS. PULLING WIRE SHALL BE THREADED THRU CAP AND SECURED ON OUTSIDE OF CAP.
4) PROVIDE 1/2" THICK STEEL PLATE OVER DUCT BANK IF COVER IS LESS THAN 30" FROM FINISH GRADE.

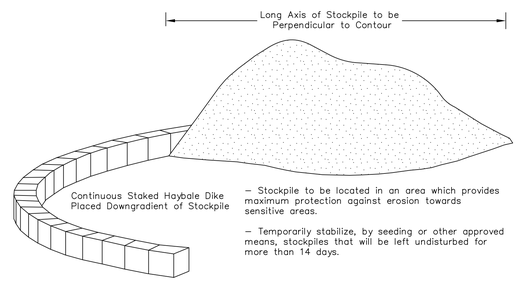
TYPICAL DUCT BANK DETAIL WITHIN ROADWAY

SCALE: N.T.S.



DEWATERING DETAIL (If Applicable)

SCALE: N.T.S.



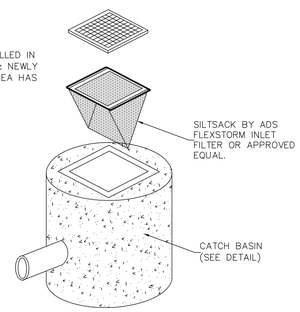
- Stockpile to be located in an area which provides maximum protection against erosion towards sensitive areas.

- Temporarily stabilize, by seeding or other approved means, stockpiles that will be left undisturbed for more than 14 days.

TEMPORARY STOCKPILE

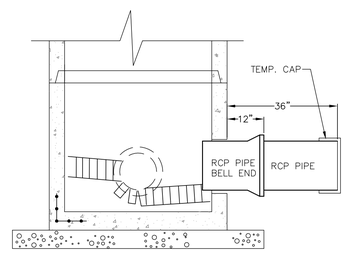
SCALE: N.T.S.

NOTES:
1. SILT SACKS SHALL BE INSTALLED IN ALL CATCH BASINS (EXISTING & NEWLY INSTALLED) UNTIL DRAINAGE AREA HAS BEEN FULLY STABILIZED.



SILT SACK

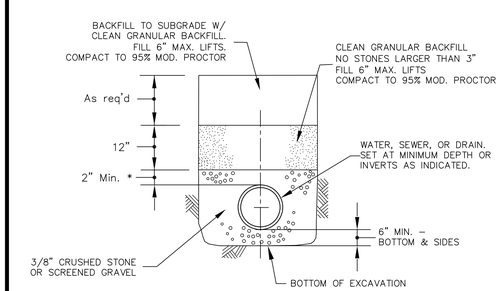
SCALE: N.T.S.



NOTES:
1. ALL STUBS SHALL BE MIN. OF 3' LONG.

TYPICAL RCP STUB

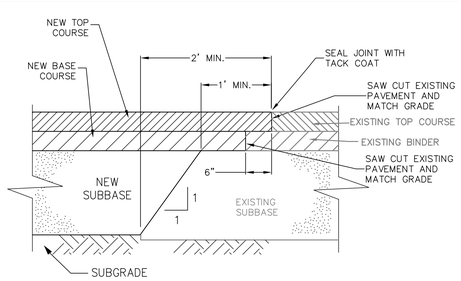
SCALE: N.T.S.



* FOR DUCTILE IRON OR RCP PIPE: TOP OF STONE IS MID-DEPTH (SPRING LINE) OF CONDUIT.

TYPICAL PIPE BEDDING SECTION

SCALE: N.T.S.



PAVEMENT MATCHING DETAIL

SCALE: N.T.S.

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Griffin Engineering Group
495 Cabot Street, 2nd Floor
Beverly, MA 01915
Tel: 978-927-5111

ISSUE DATE

DATE	DESCRIPTION
4/29/2019	SD COST ESTIMATE
7/19/2019	DESIGN DEVELOPMENT SUBMISSION
AUGUST 12, 2019	PLANNNING BOARD SUBMISSION

REVISIONS

DATE	REFERENCE

PRELIMINARY DRAFT 7/19/19 FOR CLIENT REVIEW AND COMMENT ONLY

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

BEVERLY POLICE STATION
175 ELLIOTT ST.
BEVERLY, MA

PROJECT NO.: 18028.00 DRAWN BY: MP

PHASE I DETAILS

DRAWING NO.:
C2.02

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SHEET NOTES:

1) SEE SHEET C1.00 FOR LEGEND, GENERAL NOTES, EROSION CONTROL NOTES, UTILITY NOTES, REFERENCES, AND INDEX OF CIVIL DRAWINGS.

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7/19/2019	DESIGN DEVELOPMENT SUBMISSION
AUGUST 12, 2019	PLANNNING BOARD SUBMISSION

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PRELIMINARY DRAFT 7/30/19 FOR CLIENT REVIEW AND COMMENT ONLY

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SCALE: 1"=20'

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BEVERLY, MA

PROJECT NO.: 18028.00 DRAWN BY: MP

SEDIMENTATION & EROSION CONTROL PLAN

DRAWING NO.:
C3.00

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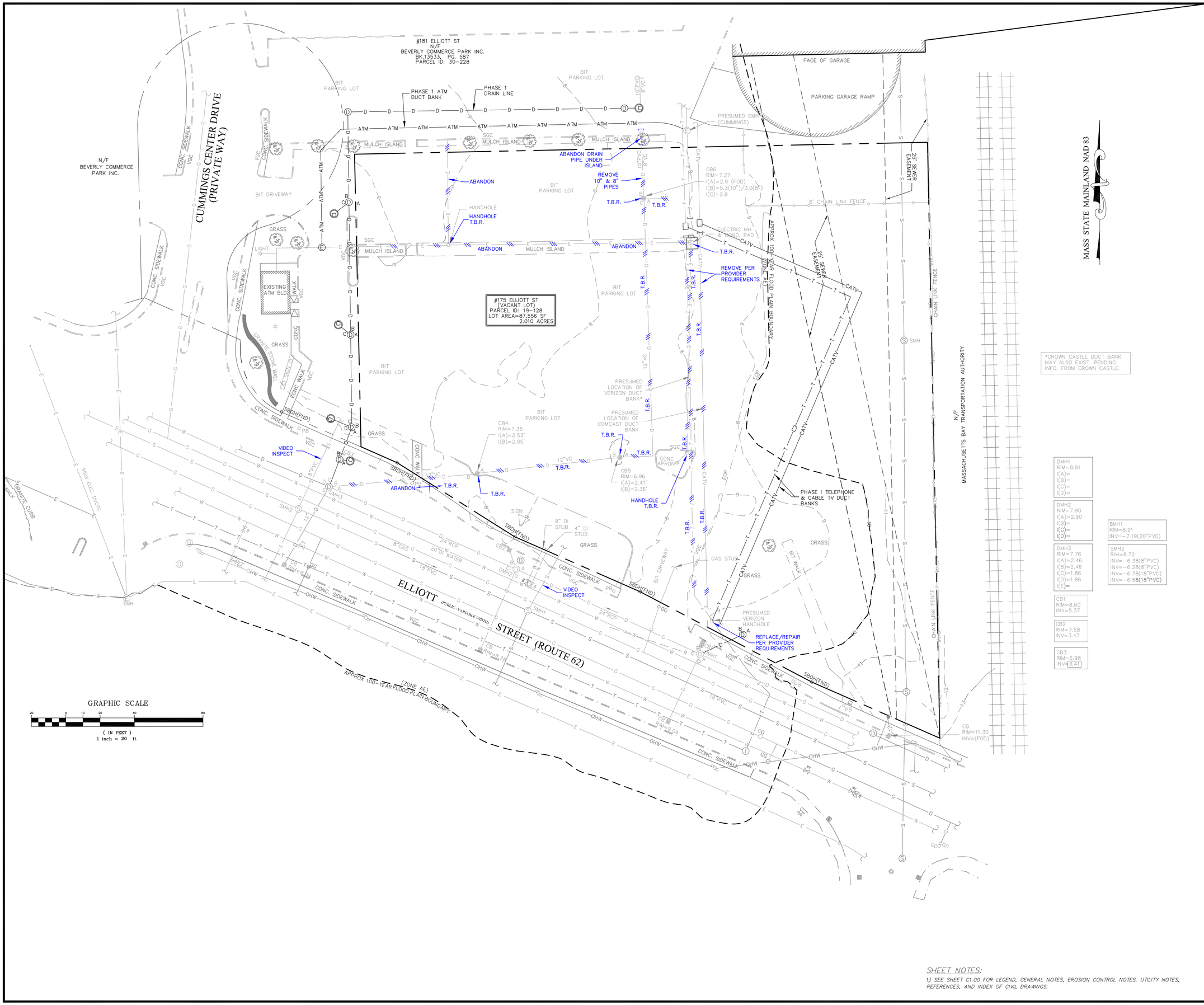

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PRELIMINARY DRAFT 7/30/19 FOR CLIENT REVIEW AND COMMENT ONLY

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SCALE: 1"=20'

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BEVERLY, MA

PROJECT NO.: 18028.00 DRAWN BY: MP

UTILITY DEMOLITION PLAN

DRAWING NO.:
C4.00

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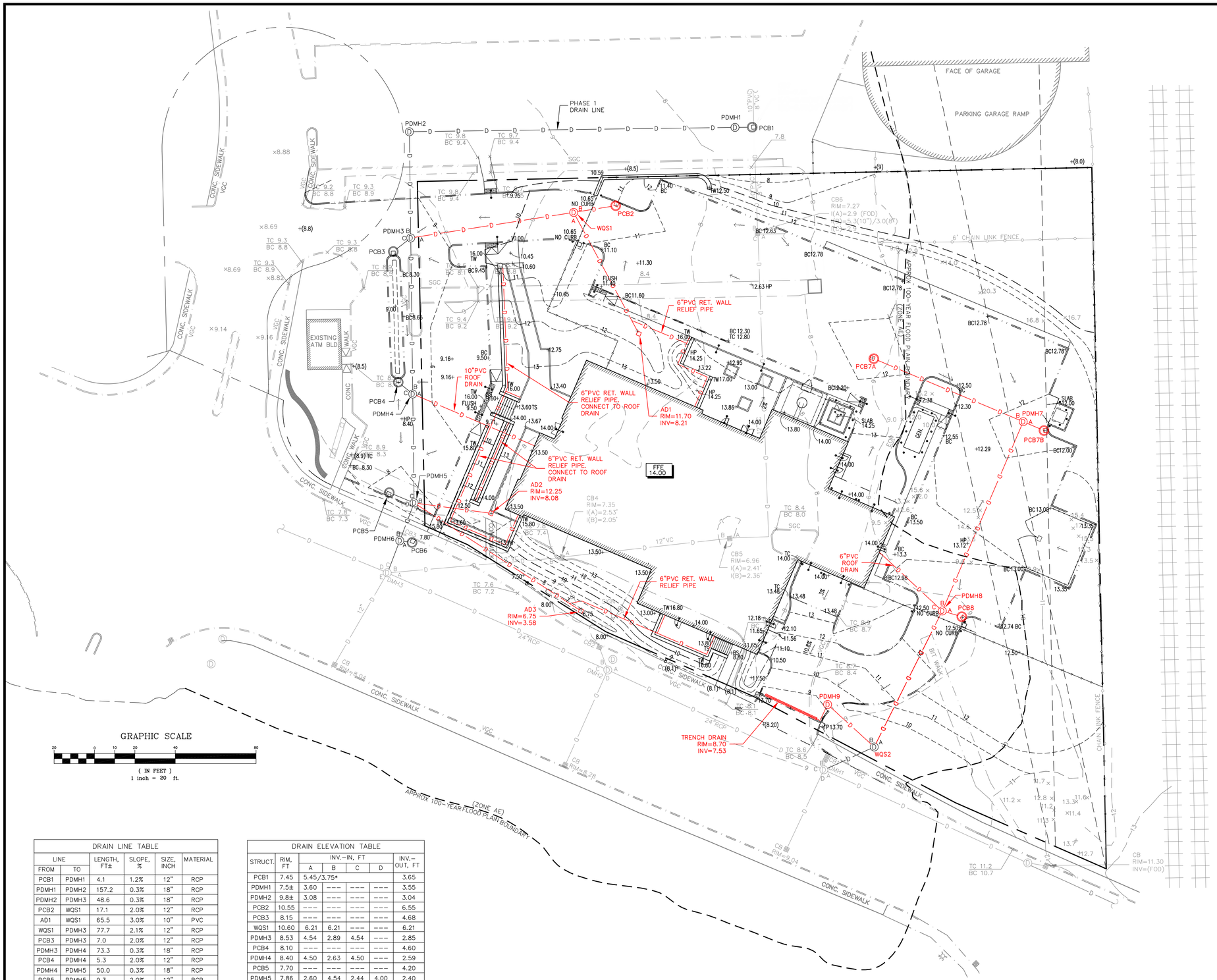

DRAIN LINE TABLE					
LINE FROM	LINE TO	LENGTH, FT±	SLOPE, %	SIZE, INCH	MATERIAL
PCB1	PDMH1	4.1	1.2%	12"	RCP
PDMH1	PDMH2	157.2	0.3%	18"	RCP
PDMH2	PDMH3	48.6	0.3%	18"	RCP
PCB2	WQS1	17.1	2.0%	12"	RCP
AD1	WQS1	65.5	3.0%	10"	PVC
WQS1	PDMH3	77.7	2.1%	12"	RCP
PCB3	PDMH3	7.0	2.0%	12"	RCP
PDMH3	PDMH4	73.3	0.3%	18"	RCP
PCB4	PDMH4	5.3	2.0%	12"	RCP
PDMH4	PDMH5	50.0	0.3%	18"	RCP
PCB5	PDMH5	9.3	2.0%	12"	RCP
AD2	PDMH5	35.4	10.5%	8"	PVC
AD3	PDMH5	95.4	1.0%	8"	PVC
PDMH5	PDMH6	16.0	0.3%	18"	RCP
PCB6	PDMH6	2.1	2.5%	12"	RCP
PDMH6	EDMH3	13.1	0.3%	18"	RCP
PCB7A	PDMH7	76.3	0.8%	12"	RCP
PCB7B	PDMH7	7.2	3.9%	12"	RCP
PDMH7	PDMH8	97.9	1.0%	12"	RCP
PCB8	PDMH8	6.1	2.0%	12"	RCP
PDMH8	WQS2	71.3	1.0%	12"	RCP
TD	PDMH9	8.6	10.8%	8"	PVC
PDMH9	WQS2	27.3	5.0%	12"	RCP
WQS2	EDMH1	23.4	**2.0%**	12"	RCP

DRAIN ELEVATION TABLE						
STRUCT.	RIM, FT	INV.–IN, FT A	INV.–IN, FT B	INV.–IN, FT C	INV.–IN, FT D	INV.–OUT, FT
PCB1	7.45	5.45/3.75*				3.65
PDMH1	7.5±	3.60	---	---	---	3.55
PDMH2	9.8±	3.08	---	---	---	3.04
PCB2	10.55	---	---	---	---	6.55
PCB3	8.15	---	---	---	---	4.68
WQS1	10.60	6.21	6.21	---	---	6.21
PDMH3	8.53	4.54	2.89	4.54	---	2.85
PCB4	8.10	---	---	---	---	4.60
PDMH4	8.40	4.50	2.63	4.50	---	2.59
PCB5	7.70	---	---	---	---	4.20
PDMH5	7.86	2.60	4.54	2.44	4.00	2.40
PCB6	6.93	---	---	---	---	3.00
PDMH6	7.1±	2.95	2.35	---	---	2.31
PCB7A	11.58	---	---	---	---	7.58
PCB7B	11.60	---	---	---	---	7.60
PDMH7	11.80	7.32	6.98	---	---	6.90
PCB8	12.38	---	---	---	---	8.38
PDMH8	12.44	8.26	5.90	8.26	---	5.82
PDMH9	9.3±	6.62	---	---	---	6.54
WQS2	9.7±	5.10	5.10	---	---	5.10

* EXISTING INVERT–IN ELEVATIONS FOR 10" PVC (5.45) & 8"VC (3.75) PIPES.

GRADING & DRAINAGE NOTES:

1) ALL CATCH BASINS SHALL BE EQUIPPED WITH A GAS/OIL HOODS ON THE DISCHARGE PIPE AND SHALL HAVE A 4' DEEP SUMP IN ACCORDANCE WITH THE MASSACHUSETTS STORMWATER MANAGEMENT POLICY.

2) ALL ROOF LEADERS PIPES WITHIN 10' OF THE BUILDING SHALL BE CAST IRON TO CONFORM TO MASSACHUSETTS BUILDING CODE AND PLUMBING CODE. ALL ROOF LEADERS PIPES BEYOND 10' OF THE BUILDING SHALL BE SDR35 PVC PIPE.

3) ALL PIPING WITHIN 10' OF THE BUILDING SHALL CONFORM TO MASSACHUSETTS BUILDING CODE, PLUMBING CODE, OR ELECTRICAL CODE, AS APPROPRIATE.

4) PLACE 4" LOAM AND GRASS LAWN SEED MIXTURE (200 LB/ACRE), STARTER FERTILIZER 19–19–19 @ 400 LB/ACRE, DRY MAGNESIUM LIME AT 2,000 LB/ACRE, AND HEAVY BLANKET OF STRAW MULCH (2,000 LB/ACRE MINIMUM) OVER ALL DISTURBED AREAS UNLESS SHOWN OTHERWISE. GRASS AREAS TO BE MAINTAINED, WATERED AND MOWED UNTIL ACCEPTANCE.

5) ALL HANDICAP ACCESSIBLE ROUTES SHALL HAVE A MAXIMUM RUNNING SLOPE (IN DIRECTION OF TRAVEL) OF 4.9% AND A MINIMUM CROSS–SLOPE OF 1% AND MAXIMUM CROSS–SLOPE OF 2% (1.5% TYPICAL). WALKS WITH RUNNING SLOPES GREATER THAN 5.0% ARE CONSIDERED RAMPS AND SHALL BE CONSTRUCTED IN ACCORDANCE TO ACCORDING WITH AMERICANS WITH DISABILITES ACT STANDARDS.

6) PROPOSED SITE LAYOUT AND TOPOGRAPHY BY KAESTLE BOOS ASSOCIATES, INC.

SHEET NOTES:

1) SEE SHEET C1.00 FOR LEGEND, GENERAL NOTES, EROSION CONTROL NOTES, UTILITY NOTES, REFERENCES, AND INDEX OF CIVIL DRAWINGS.

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AUGUST 12, 2019	PLANNNING BOARD SUBMISSION

REVISIONS

DATE	REFERENCE

PRELIMINARY DRAFT 7/30/19 FOR CLIENT REVIEW AND COMMENT ONLY

SCALE: 1"=20'

BEVERLY POLICE STATION
175 ELLIOTT ST.
BEVERLY, MA

PROJECT NO.: 18028.00 DRAWN BY: MP

PROPOSED DRAINAGE PLAN

DRAWING NO.:
C5.00

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*CROWN CASTLE DUCT BANK MAY ALSO EXIST. PENDING INFO. FROM CROWN CASTLE.

SMH1
RIM=8.91
INV=-7.19(20"PVC)

SMH2
RIM=8.72
INV=-6.38(8"PVC)
INV=-6.28(8"PVC)
INV=-6.78(18"PVC)
INV=-6.88(18"PVC)

SHEET NOTES:

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

BEVERLY POLICE STATION
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PROJECT NO.: 18028.00 DRAWN BY: MP

PROPOSED UTILITIES

DRAWING NO.:
C6.00

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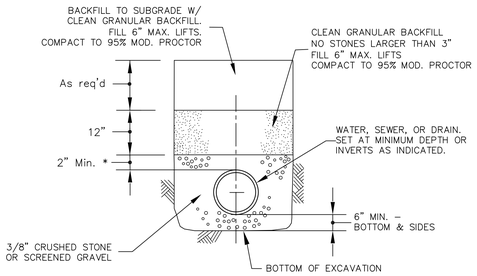
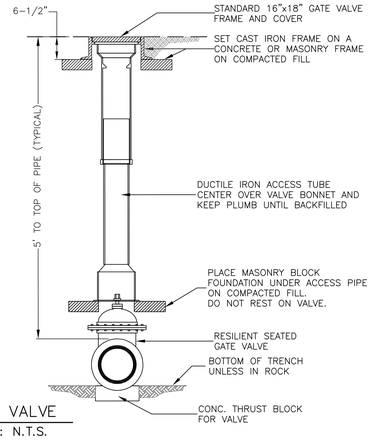


* FOR DUCTILE IRON OR RCP PIPE: TOP OF STONE IS MID-DEPTH (SPRING LINE) OF CONDUIT.

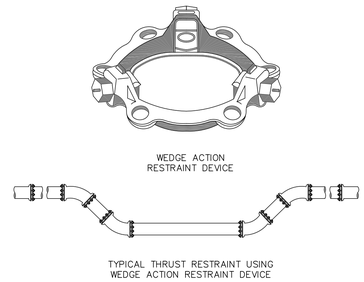
TYPICAL PIPE BEDDING SECTION

SCALE: N.T.S.



GATE VALVE

SCALE: N.T.S.



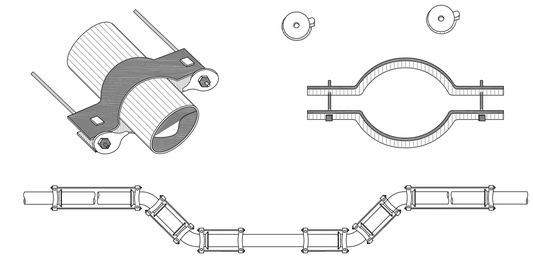
NOTES:
1) DEVICES NEED TO BE PLACED BEYOND THE AREA OF RESTRAINTS IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS.

TYPICAL THRUST RESTRAINT WEDGE ACTION RESTRAINT TYPE JOINTS

SCALE: N.T.S.

SCHEDULE OF TIE RODS

PIPE SIZE	NUMBER OF RODS PER FITTING	DIAMETER OF RODS
4" – 12"	2	3/4"
16"	4	3/4"



TYPICAL THRUST RESTRAINTS USING TIE RODS AND FRICTION CLAMPS

SCALE: N.T.S.

CODE NUMBERS FOR PIPE SIZES OF:

ITEM	2"	3"	4"
1	CONDUIT BEND, GALVANIZED (STD 3253) 690424 (2' R)	690436 (3' R)	690446 (3' R)
2	CONDUIT – 10' LENGTH – GALVANIZED STEEL 692105	692107	692109
3	RISER STRAPS – STD 3255 641200	641205	641210
4	LAG SCREWS 3/8" x 3"		
5	RISER PIPE CONNECTOR 961270	961275	961285
6	#6 COPPER SOLID BARE (24" LONG) 943061		

* REFER TO STD 3240 FOR 5" & 6" RISER INSTALLATIONS.

NOTES:
1. RISER PIPES SHALL BE LOCATED ON THE STREET QUARTER OF THE POLE, AND, WHEN POSSIBLE ON THE QUARTER AWAY FROM APPROACHING TRAFFIC.
2. RISER PIPES SHOULD NOT BE PLACED ON SAME POLE WITH COMMUNICATIONS RISER IF AVOIDABLE.
3. FOR A CUSTOMER-OWNED RISER, 600 VOLTS AND BELOW, RIGID NONMETALLIC CONDUIT, IN ACCORDANCE WITH ARTICLE 300-5 OF THE NATIONAL ELECTRIC CODE, IS ACCEPTABLE.

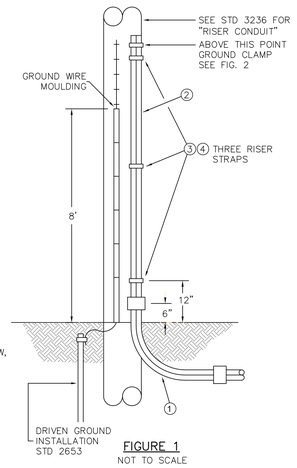
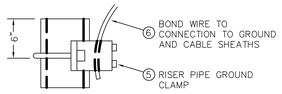


FIGURE 1
NOT TO SCALE

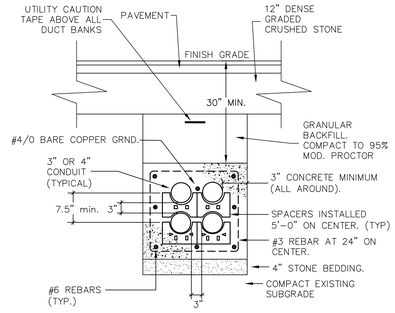


NOTE:
INSTALL GROUND CLAMP AS SHOWN. CONNECT TO POLE EQUIPMENT GROUNDING CONDUCTOR WHEN AVAILABLE. OTHERWISE, INSTALL GROUND ROD AND RUN MIN. #6 SOLID COPPER UP POLE AND CONNECT TO COMMON NEUTRAL. INSTALL 8 FEET OF MOULDING OVER GROUND WIRE AND CONNECT RISER GROUND CLAMP TO GROUND WIRE ABOVE MOULDING AS SHOWN.

FIGURE 2
NOT TO SCALE

RISER PIPE INSTALLATION DETAIL

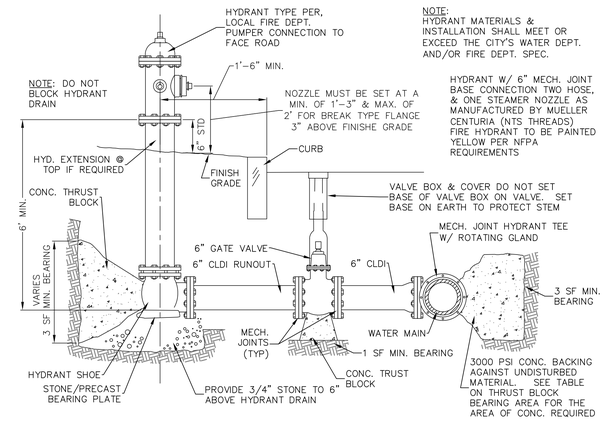
SCALE: N.T.S.



NOTES:
1) DIMENSIONS SHOWN ARE TYPICAL DUCT BANK CONFIGURATIONS.
2) CONDUIT SHALL BE SCH. 40 PVC, PROVIDED WITH PULLING WIRE ONLY. CABLE BY OTHERS.
3) CONDUITS SHALL BE PLUGGED WITH PASTIC CAPS. PULLING WIRE SHALL BE THREADED THRU CAP AND SECURED ON OUTSIDE OF CAP.
4) PROVIDE 1/2" THICK STEEL PLATE OVER DUCT BANK IF COVER IS LESS THAN 30" FROM FINISH GRADE.

TYPICAL DUCT BANK DETAIL WITHIN ROADWAY

SCALE: N.T.S.



TYPICAL HYDRANT ASSEMBLY WITH DRAIN

SCALE: N.T.S.

TABLE OF MINIMUM BEARING AREAS IN SQ. FT. AGAINST UNDISTURBED MATERIAL

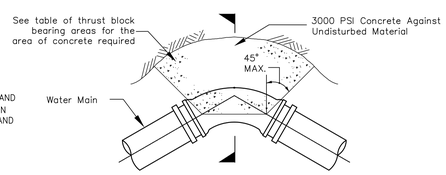
PIPE SIZE	BEND	PRESSURE 150 PSI – TYPE OF SOIL CONDITION: A	B	C	D	E	F	G
6" and smaller	TEES & PLUGS	8.5	4.5	3	2.5	1.5	1.5	1
	90	12	6	4	3	2	1.5	1.5
	45	6.5	3.5	2.5	2	1.5	1	1
	22 1 /2	3.5	2	1.5	1	1	0.5	0.5
8"	TEES & PLUGS	15.5	8	5.5	4	3	2	1.5
	90	21.5	11	7.5	5.5	4	3	2.5
	45	12	6	4	3	2	1.5	1.5
	22 1 /2	6	3	2	1.5	1	1	1

TYPE OF SOIL CONDITION
A – SOFT CLAY; FINE LOOSE SAND
B – SAND & CLAY; MIXED OR IN LAYERS; FINE CONFINED SAND
C – HARD DRY CLAY
D – COARSE SAND
E – GRAVEL
F – SOFT ROCK
G – HARD PAN

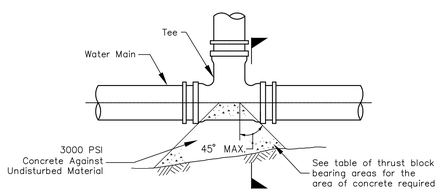
NOTES:
1. For fittings with less than 22 1/2 deflection use bearing areas for 22 1/2 bend.
2. Joints shall not be encased in concrete. Bearing areas may be disregarded for trenches in rock where the top of the rock face is at or above the crown of the pipe. However, concrete backing shall be placed between the pipe and rock face.

CONCRETE THRUST BLOCK BEARING AREA

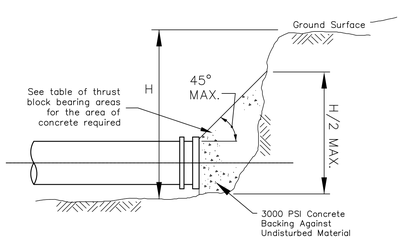
SCALE: N.T.S.



PLAN OF THRUST BLOCK AT BEND

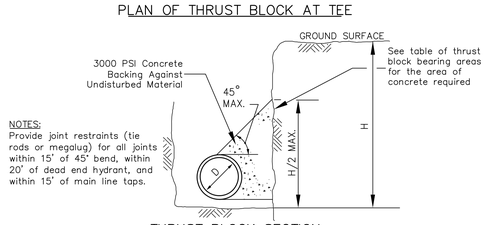


PLAN OF THRUST BLOCK AT TEE



CONCRETE THRUST BLOCK AT PLUG

SCALE: N.T.S.



NOTES:
Provide joint restraints (tie rods or megalug) for all joints within 15' of 45° bend, within 20' of dead end hydrant, and within 15' of main line taps.

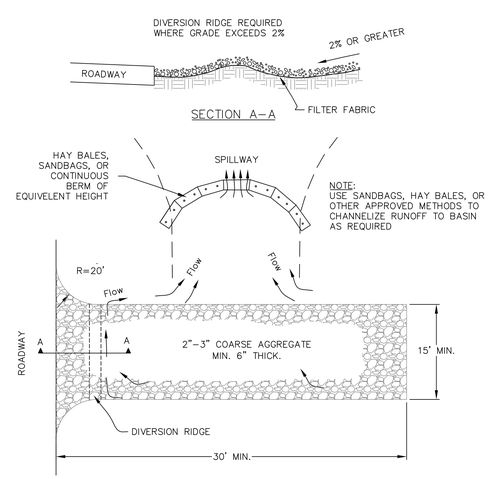
THRUST BLOCK SECTION

CONCRETE THRUST BLOCK

SCALE: N.T.S.

THRUST BLOCK DETAIL

SCALE: N.T.S.



PLAN

NOTES:
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.

CONSTRUCTION ENTRANCE

SCALE: N.T.S.

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Email: kba@kba-architects.com ▲ Web: www.kba-architects.com

Griffin Engineering Group
495 Cabot Street, 2nd Floor
Beverly, MA 01915
Tel: 978-927-5111

ISSUE DATE

DATE	DESCRIPTION
4/29/2019	SD COST ESTIMATE
7/19/2019	DESIGN DEVELOPMENT SUBMISSION
AUGUST 12, 2019	PLANNNING BOARD SUBMISSION

REVISIONS

DATE	REFERENCE

PRELIMINARY DRAFT 7/30/19 FOR CLIENT REVIEW AND COMMENT ONLY

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

BEVERLY POLICE STATION
175 ELLIOTT ST.
BEVERLY, MA

PROJECT NO.: 18028.00 DRAWN BY: MP

DETAILS I

DRAWING NO.:
C7.00

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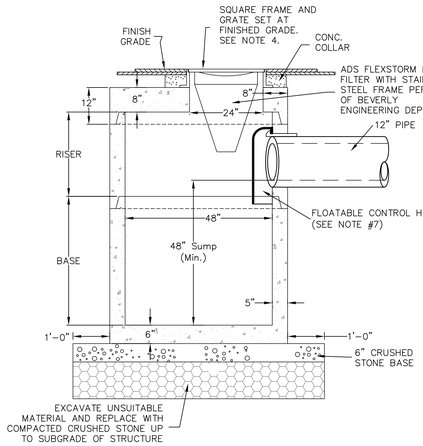
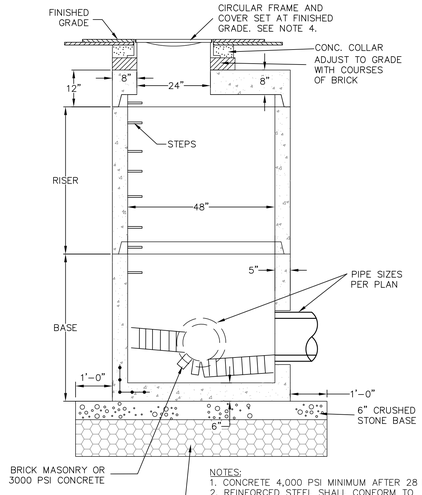


NOTES:
1. CONCRETE 4,000 PSI MINIMUM AFTER 28 DAYS.
2. REINFORCED STEEL SHALL CONFORM TO LATEST ASTM A185 SPEC. 0.12 SQ. IN./LINEAL FT. AND 0.12 SQ. IN. (BOTH WAYS) BASE BOTTOM.
3. H–20 DESIGN LOADING.
4. EAST JORDAN IRON WORKS, INC FRAME & GRATE (MA554000002) OR APPROVED EQUIVALENT.
5. SHEA PRECAST OR APPROVED EQUIVALENT.
6. TONGUE & GROOVE JOINTS SEALED WITH BUTYL RESIN. BUTYL RESIN.
7. FLOATABLE CONTROL HOOD SHALL BE THE "SNOUT" (MANUFACTURED BY BMP, INC, LYME, CT) OR APPROVED EQUAL SUCH AS R–3701 HOOD (MANUFACTURED BY NEENAH FOUNDRY, INC., NEENAH, WI) OR "ELIMINATOR" (MANUFACTURED BY GROUNDWATER RESCUE, INC., QUINCY, MA).

4–ft DIA. PRECAST CATCH BASIN

SCALE: N.T.S.



NOTES:
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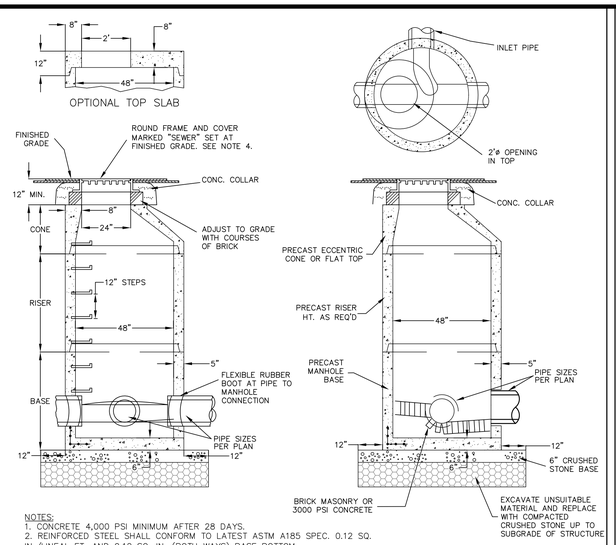
2. REINFORCED STEEL SHALL CONFORM TO LATEST ASTM A185 SPEC. 0.12 SQ. IN./LINEAL FT. AND 0.12 SQ. IN. (BOTH WAYS) BASE BOTTOM.
3. H–20 DESIGN LOADING.
4. H–20 RATED CAST IRON FRAME AND COVER.
5. SHEA PRECAST OR APPROVED EQUIVALENT.
6. TONGUE & GROOVE JOINTS SEALED WITH BUTYL RESIN. BUTYL RESIN.

TYPICAL 4'ø PRECAST DRAIN MANHOLE

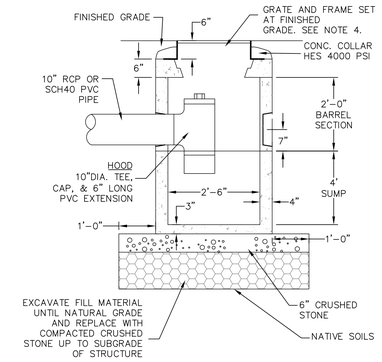
SCALE: N.T.S.



NOTES:
1. CONCRETE 4,000 PSI MINIMUM AFTER 28 DAYS.
2. REINFORCED STEEL SHALL CONFORM 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.
4. EJCO 24" FRAME & SOLID COVER (MARKED SEWER) OR APPROVED EQUIVALENT.
5. SHEA PRECAST OR APPROVED EQUIVALENT.
6. TONGUE & GROOVE JOINTS SEALED WITH BUTYL RESIN.

4' DIA. PRECAST SEWER MANHOLE

SCALE: N.T.S.



NOTES:
1. CONCRETE 4,000 PSI MINIMUM AFTER 28 DAYS.
2. REINFORCED STEEL SHALL CONFORM 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.
4. EAST JORDAN IRON WORKS, INC FRAME & GRADE (MA552000021) OR APPROVED EQUIVALENT.
5. E.F. SHEA 30" PRECAST DRAIN MANHOLE OR APPROVED EQUIVALENT.
6. TONGUE & GROOVE JOINTS SEALED WITH BUTYL RESIN. BUTYL RESIN.

AREA DRAIN – 30"ø PRECAST CATCH BASIN

SCALE: N.T.S.

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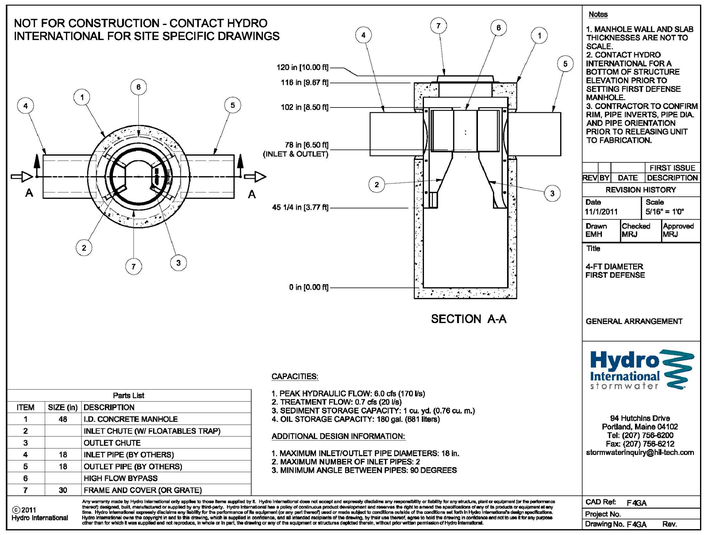

Parts List		
ITEM	SIZE (in)	DESCRIPTION
1	48	I.D. CONCRETE MANHOLE
2		INLET CHUTE (W/ FLOATABLES TRAP)
3		OUTLET CHUTE
4	18	INLET PIPE (BY OTHERS)
5	18	OUTLET PIPE (BY OTHERS)
6		HIGH FLOW BYPASS
7	30	FRAME AND COVER (OR GRATE)

CAPACITIES:
1. PEAK HYDRAULIC FLOW: 6.0 cfs (170 l/s)
2. TREATMENT FLOW: 0.7 cfs (20 l/s)
3. SEDIMENT STORAGE CAPACITY: 1 cu. yd. (0.76 cu. m.)
4. OIL STORAGE CAPACITY: 190 gal. (681 liters)

ADDITIONAL DESIGN INFORMATION:
1. MAXIMUM INLET/OUTLET PIPE DIAMETERS: 18 in.
2. MAXIMUM NUMBER OF INLET PIPES: 2
3. MINIMUM ANGLE BETWEEN PIPES: 90 DEGREES

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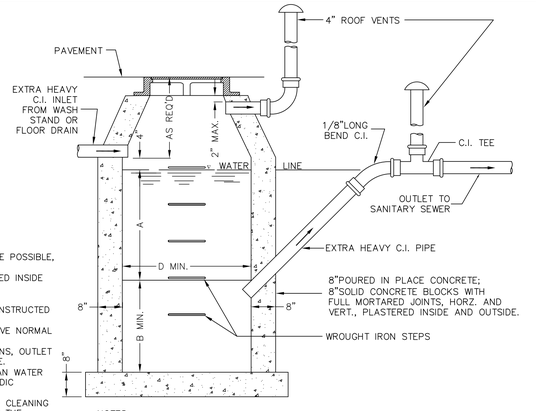
WATER QUALITY STRUCTURE

SCALE: N.T.S.

INLET	D	A	B
4"	3'–6"ø	3'–0"	2'–6"
5"	3'–6"ø	5'–0"	4'–0"
	3'–6"x 3'–6"	4'–0"	3'–0"
	4'–0"	3'–8"	3'–0"
	4'–0"x 4'–0"	3'–0"	2'–6"
	4'–6"	3'–0"	2'–6"
6"	4'–0"ø	5'–0"	4'–6"
	4'–0"x 4'–0"	4'–0"	3'–6"
	4'–6"ø	4'–0"	3'–6"
	4'–6"x 4'–6"	3'–6"	3'–0"
	5'–0"ø	3'–6"	3'–0"
	5'–0"x 5'–0"	3'–0"	2'–6"

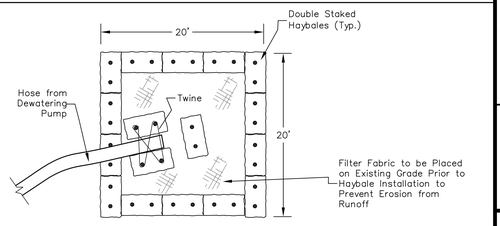
GENERAL CONSTRUCTION NOTES:
1) BASIN TO BE LOCATED OUTSIDE OF BUILDING WHERE POSSIBLE, COVER TO HAVE A CENTER HOLE.
2) A TIGHT COVER MUST BE USED IF BASIN IS LOCATED INSIDE OF BUILDING.
3) OPENING SHALL BE NOT LESS THAN 24" DIA.
4) THE CATCH BASIN SHALL BE SO LOCATED AND CONSTRUCTED THAT SURFACE WATER 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 CATCH BASIN 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 BASIN, 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 M.W.R.A.
10) WROUGHT IRON STEPS SHALL BE SPACED ABOUT 18" APART.
11) BOTH VENTS SHALL BE EXTENED INDEPENDENTLY 18" ABOVE THE ROOF, OR AS APPROVED BY THE LOCAL AUTHORITIES, AND THE AUTHORITIES OF THE M.W.R.A.
12) OUTLET PIPE TO BE 45'ANGLE.



NOTES:
1) INLET PIPE TO BE SIZED BY PLUMBING CONTRACTOR
2) FOR INLETS LARGER THAN 10" THE DESIGN AND DIMENSIONS WILL BE DETERMINED FOR EACH PARTICULAR CASE
3) PRE–CAST SEPARATORS ARE TO HAVE ALL SPECIFIED HOLES EITHER CORE–BORED OR CAST IN PLACE.
4) ALL INLET TRAPS TO BE PROVIDED IN ACCORDANCE WITH 248 CMR 2.00
5) ALUMINUM OR PLASTIC COATED WROUGHT IRON STEPS CAN BE USED.
6) PORTLAND CEMENT MORTAR USED SHALL CONSIST OF 1 PART CEMENT, 2 PARTS SAND. CEMENT BRICK,HOLLOW CONCRETE, OR CINDER BLOCK MASONRY MUST NOT BE USED.

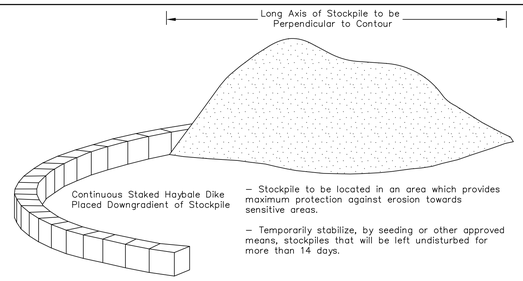
MDC TRAP

SCALE: N.T.S.



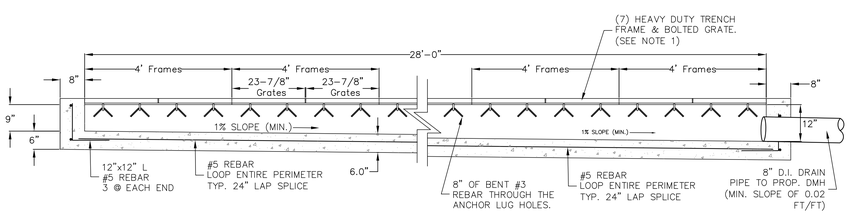
DEWATERING DETAIL (If Applicable)

SCALE: N.T.S.

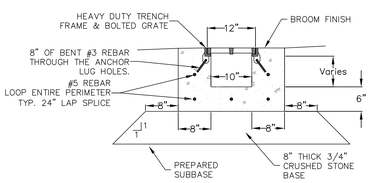


TEMPORARY STOCKPILE

SCALE: N.T.S.



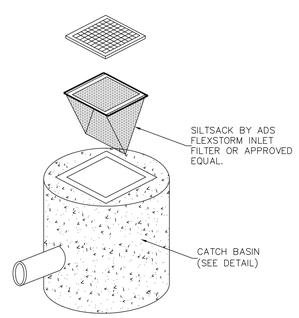
NOTES:
1) EAST JORDAN IRON WORKS (EJIW) 12" WIDE BOLTED TRENCH FRAME & GRATE (CATALOG #6903) OR APPROVED ALTERNATE.
2) HEAVY DUTY GRATES SATISFY THE AASHTO H–20 LOADING CONDITIONS.
3) REFER TO EJIW BOLTED TRENCH DRAIN SUGGESTED FORMING PROCEDURE FOR INSTALLATION.
4) CONCRETE 3,000 PSI MINIMUM AFTER 28 DAYS.



SECTION

TRENCH DRAIN

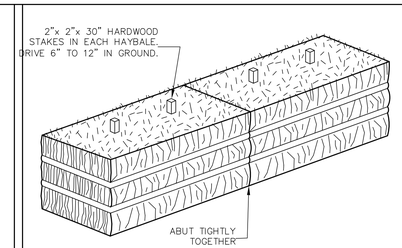
SCALE: N.T.S.



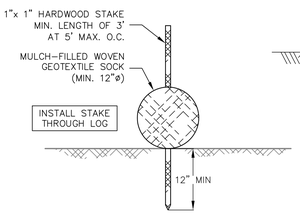
NOTES:
1. SILT SACKS SHALL BE INSTALLED IN ALL CATCH BASINS UNTIL DRAINAGE AREA HAS BEEN FULLY STABILIZED.

SILT SACK

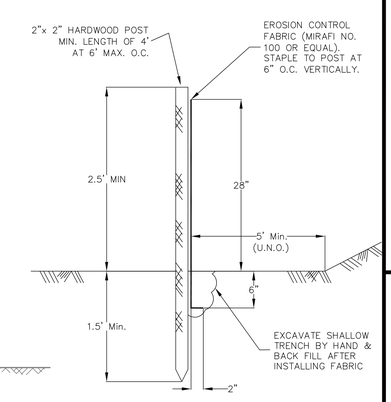
SCALE: N.T.S.



HAYBALE



STRAW WATTLE OR SILT SOCK



SILT FENCE

EROSION CONTROL

SCALE: N.T.S.

BEVERLY POLICE STATION
175 ELLIOTT ST.
BEVERLY, MA

PROJECT NO.: 18028.00 DRAWN BY: MP

DETAILS II

DRAWING NO.:
C7.01

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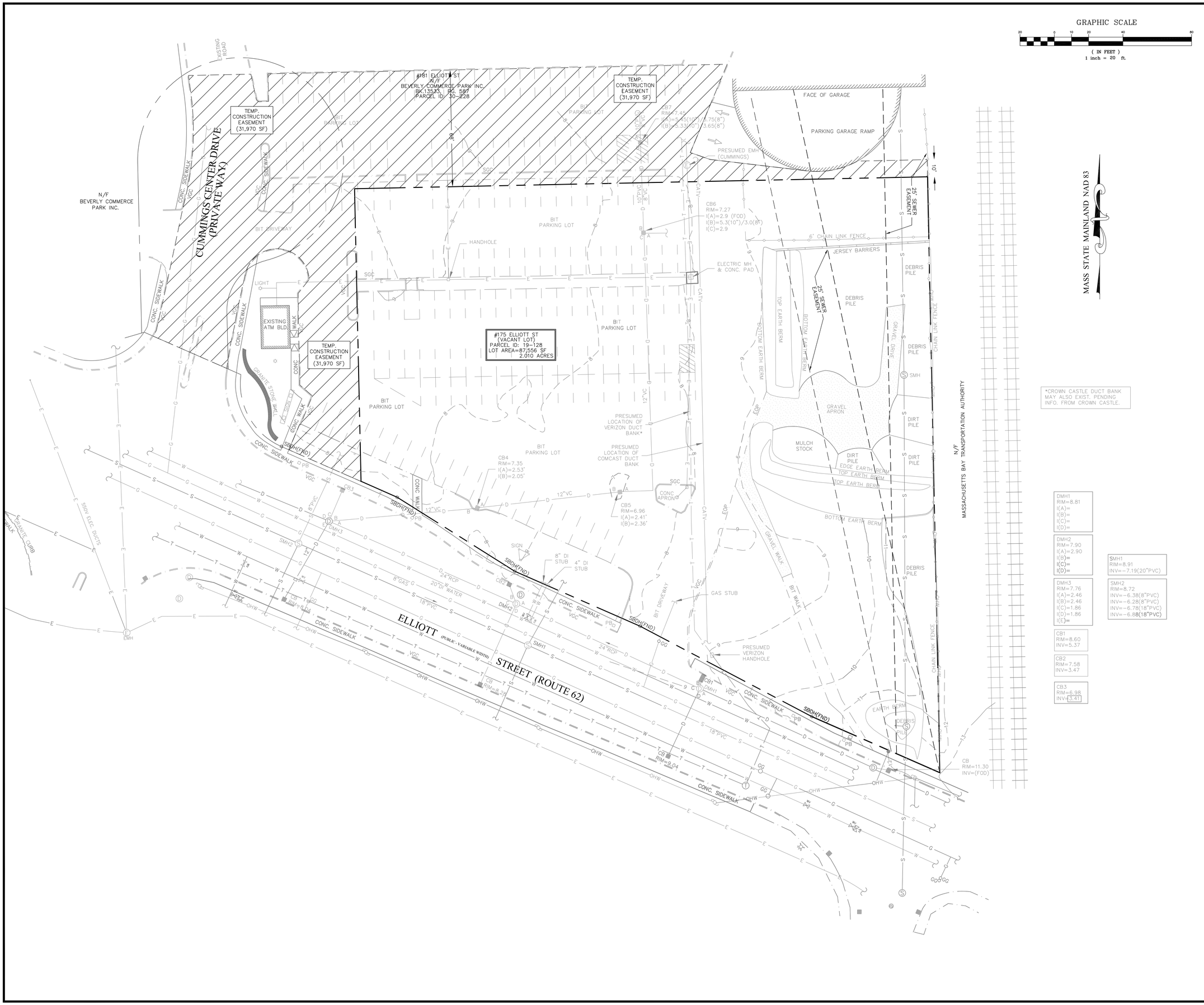

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4/29/2019	SD COST ESTIMATE
7/19/2019	DESIGN DEVELOPMENT SUBMISSION
AUGUST 12, 2019	PLANNNING BOARD SUBMISSION

REVISIONS

DATE	REFERENCE

PRELIMINARY DRAFT 7/30/19 FOR CLIENT REVIEW AND COMMENT ONLY

BEVERLY POLICE STATION
175 ELLIOTT ST.
BEVERLY, MA

PROJECT NO.: 18028.00 DRAWN BY: MP

TEMPORARY CONSTRUCTION EASEMENT

DRAWING NO.:
C8.00

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Griffin
Engineering Group
495 Cabot Street, 2nd Floor
Beverly, MA 01915
Tel: 978-927-5111

ISSUE DATE

DATE	DESCRIPTION
4/29/2019	SD COST ESTIMATE
7/19/2019	DESIGN DEVELOPMENT SUBMISSION
AUGUST 12, 2019	PLANNNING BOARD SUBMISSION

REVISIONS

DATE	REFERENCE

PRELIMINARY DRAFT 7/30/19 FOR CLIENT REVIEW AND COMMENT ONLY

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

BEVERLY POLICE STATION
175 ELLIOTT ST.
BEVERLY, MA

PROJECT NO.: 18028.00 DRAWN BY: MP

PERMANENT ACCESS & UTILITY EASEMENTS

DRAWING NO.:
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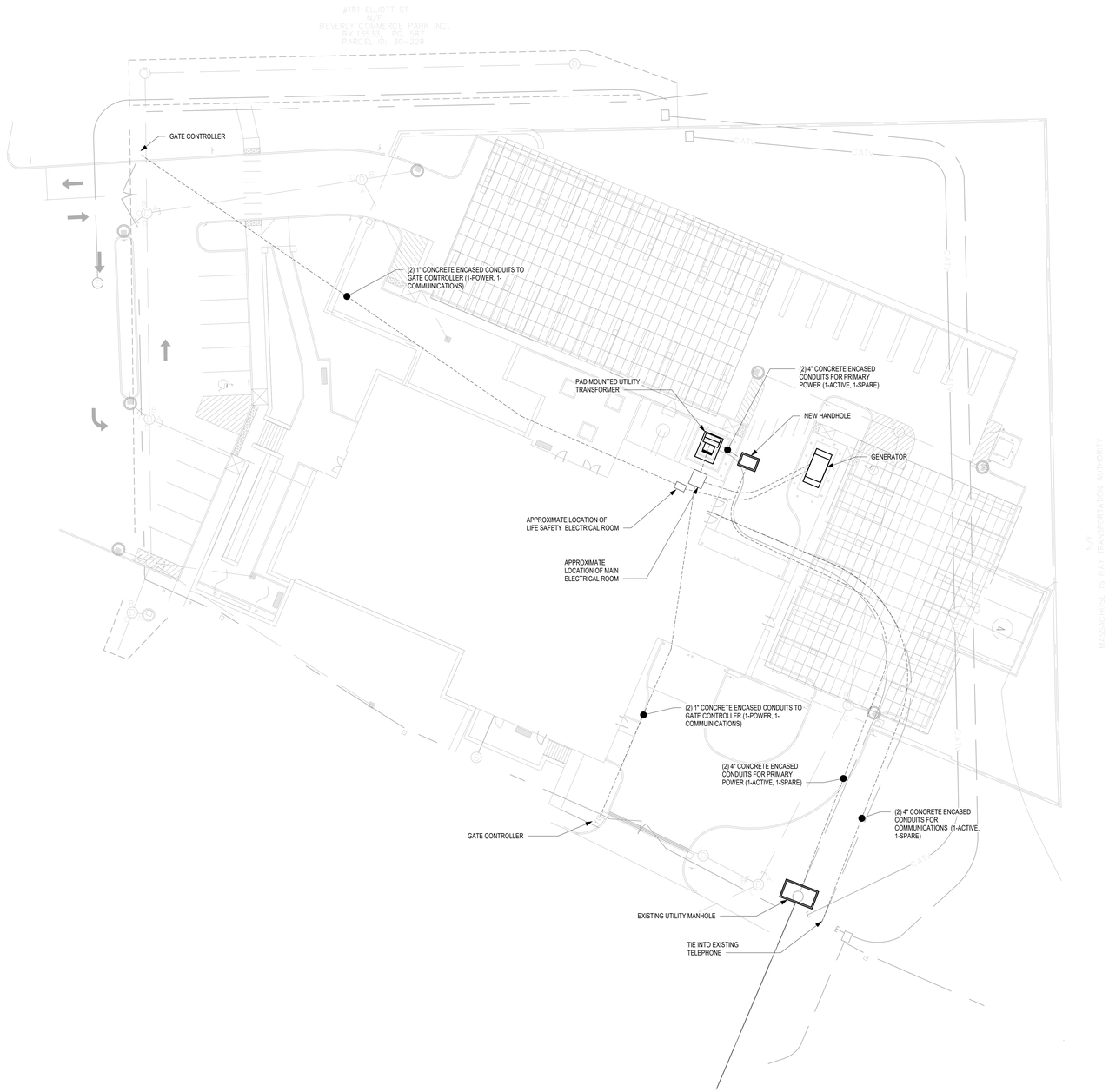

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AWE
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78 Blanchard Road, Suite 202
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p: 781.652.8688; f: 781.652.8689
w: www.awe-e.com

ISSUE DATE

DATE	DESCRIPTION
AUGUST 2, 2019	DESIGN DEVELOPMENT ESTIMATE SET
AUGUST 12, 2019	PLANNNING BOARD SUBMISSION

REVISIONS

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FOR ALL ABBREVIATIONS, SYMBOL LEGENDS, AND GENERAL NOTES SEE SHEET R0.01

KEY PLAN

0' 4' 8' 16'
SCALE: 1/8" = 1'-0"
PROJECT TRUE

BEVERLY POLICE DEPARTMENT

175 Elliott Street
Beverly, MA 01915

PROJECT NO.: 2180771 DRAWN BY: Author

ELECTRICAL SITE PLAN

DRAWING NO.:
E0.03

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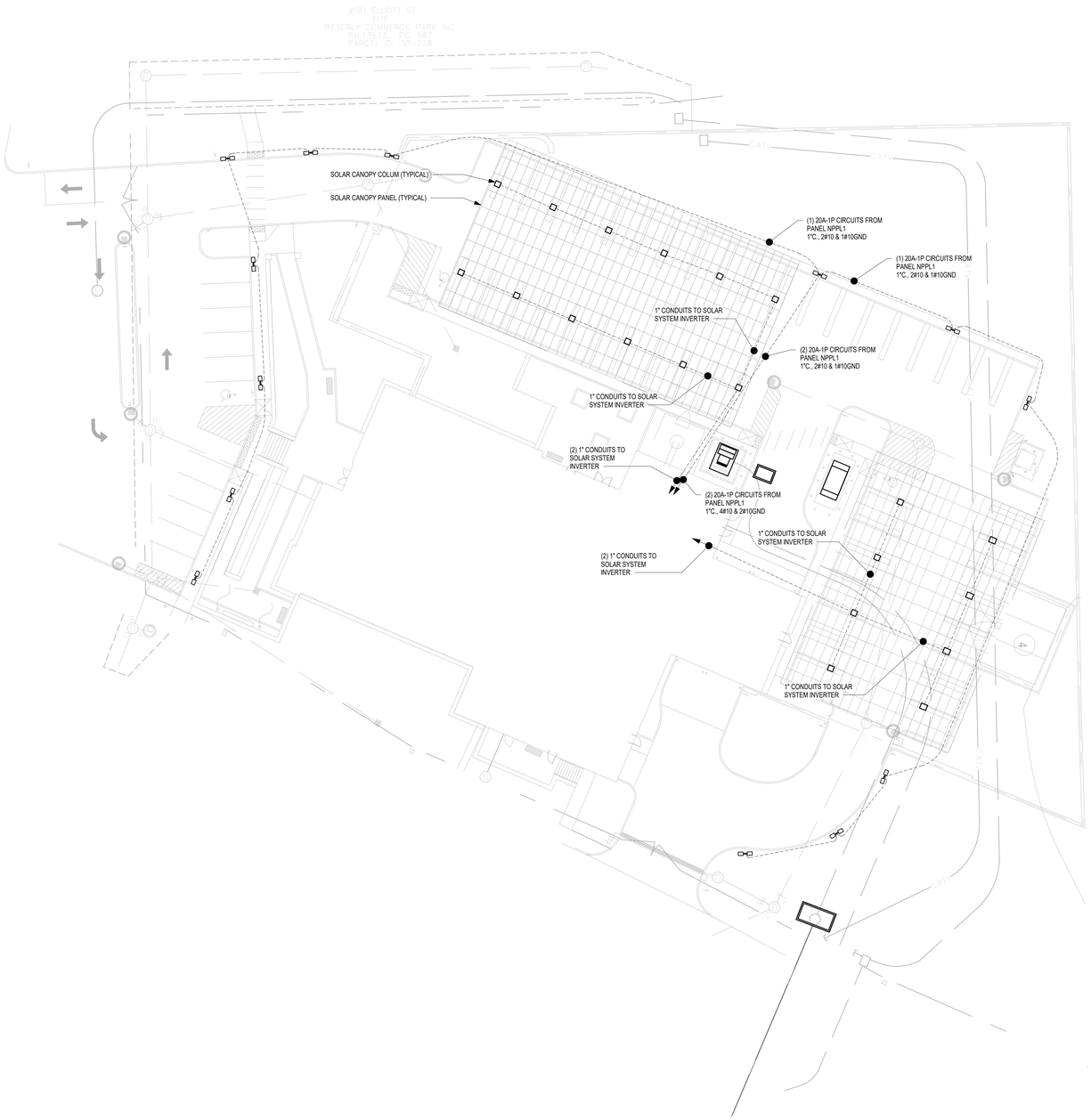

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PROJECT TRUE

BEVERLY POLICE DEPARTMENT

175 Elliott Street
Beverly, MA 01915

PROJECT NO.: 2180771 DRAWN BY: Author

ELECTRICAL SITE LIGHTING PLAN

DRAWING NO.:
E0.04

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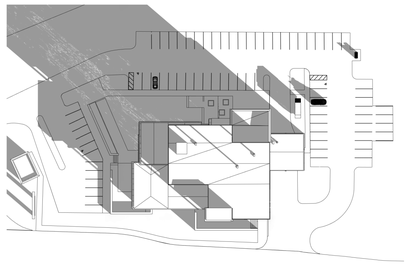
DEC 22



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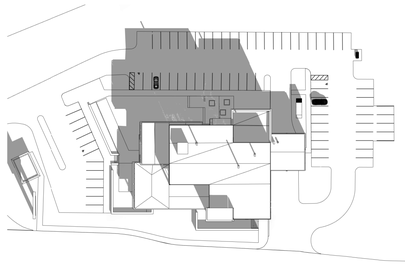

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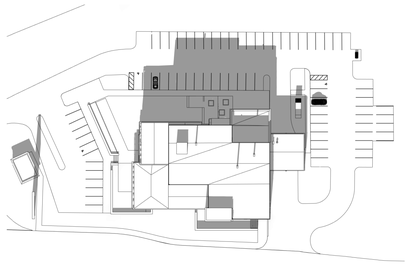

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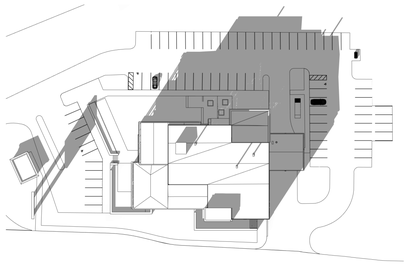

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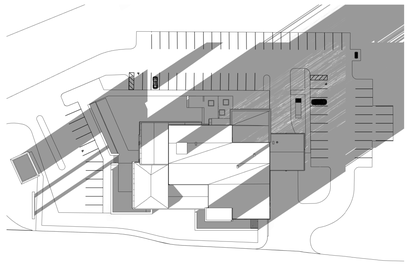

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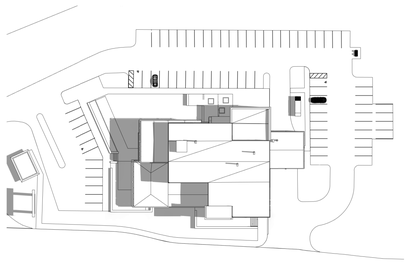

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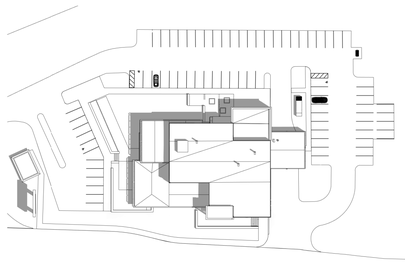

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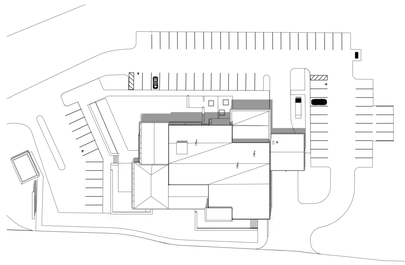

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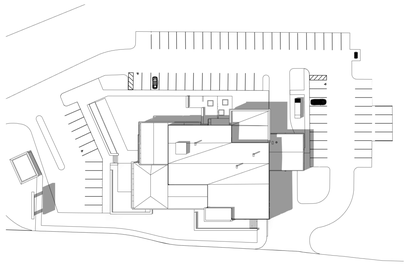

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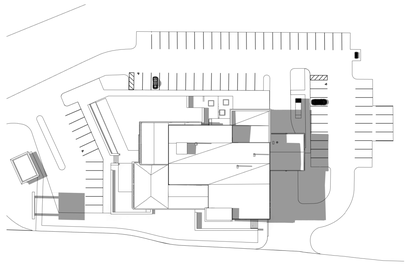

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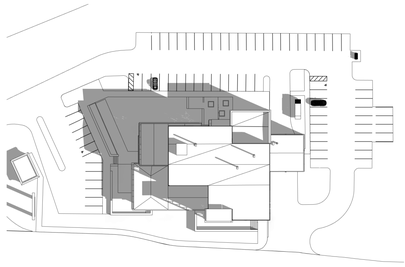

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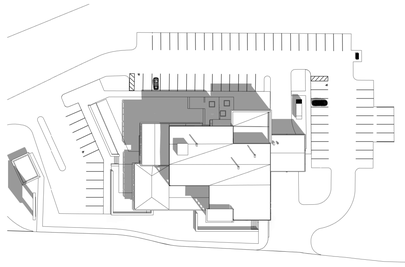

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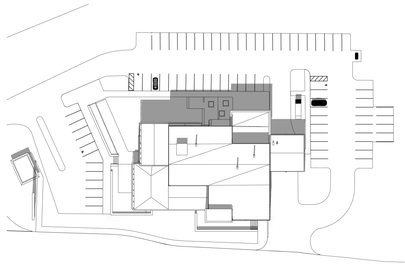

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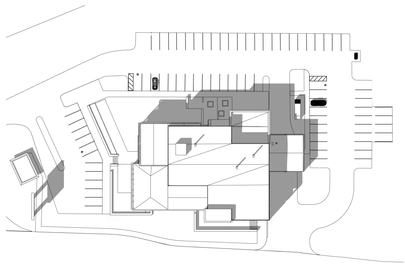

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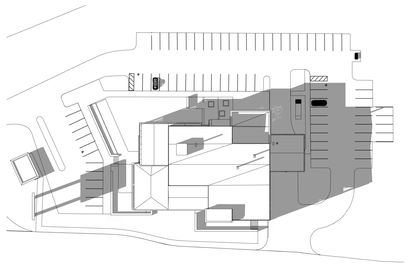

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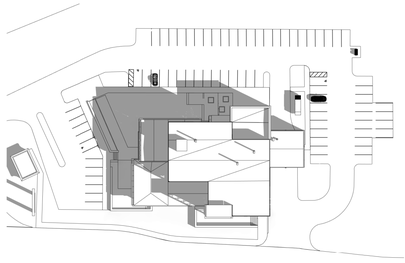

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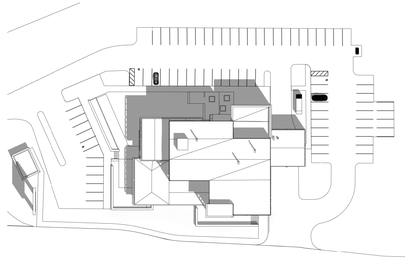

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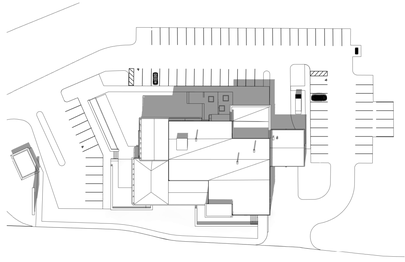

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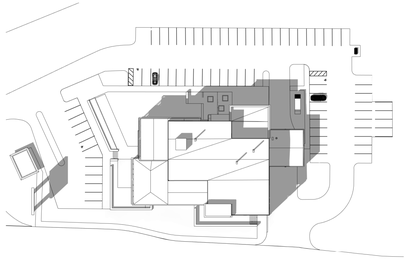

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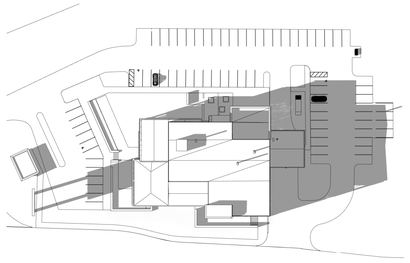

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ISSUE DATE

DATE	DESCRIPTION
AUGUST 2, 2019	DESIGN DEVELOPMENT ESTIMATE SET
AUGUST 12, 2019	PLANNNING BOARD SUBMISSION

REVISIONS

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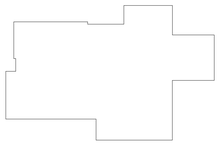

KEY PLAN

0' 4' 8' 16'
SCALE: 1/8" = 1'-0"
PROJECT TRUE

BEVERLY POLICE STATION

175 Elliott Street Beverly, MA 01915

PROJECT NO.: 18028.00 DRAWN BY: SB

SOLAR STUDY

DRAWING NO.:

RD2.0

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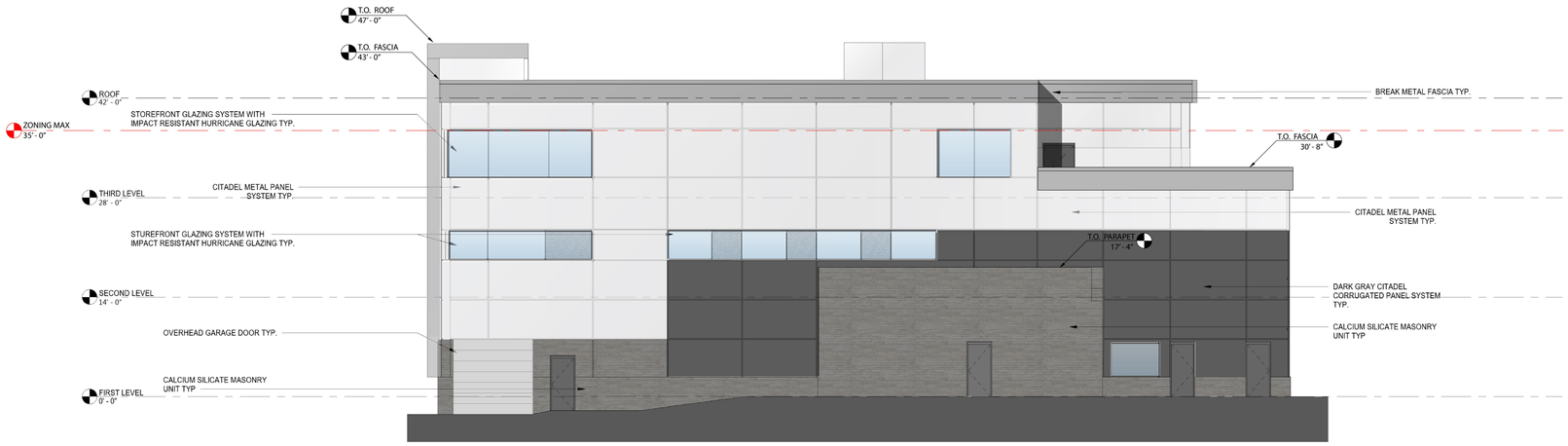

1 EAST ELEVATION
1/8" = 1'-0"

2 SOUTH ELEVATION
1/8" = 1'-0"

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ISSUE DATE

DATE	DESCRIPTION
JUNE 5, 2019	
MONTH DAY, YEAR	DRAWINGS ISSUED FOR DD ESTIMATE
AUGUST 12, 2019	PLANNNING BOARD SUBMISSION

REVISIONS

DATE	DESCRIPTION

FOR ALL ABBREVIATIONS, SYMBOL LEGENDS, AND GENERAL NOTES SEE SHEET R0.01

KEY PLAN

0' 4' 8' 16'
SCALE: 1/8" = 1'-0"
PROJECT TRUE

BEVERLY POLICE DEPARTMENT

Elliott Street Beverly, MA 01915

PROJECT NO.:
DRAWN BY: Author

EXTERIOR ELEVATIONS I

DRAWING NO.:
A5.01

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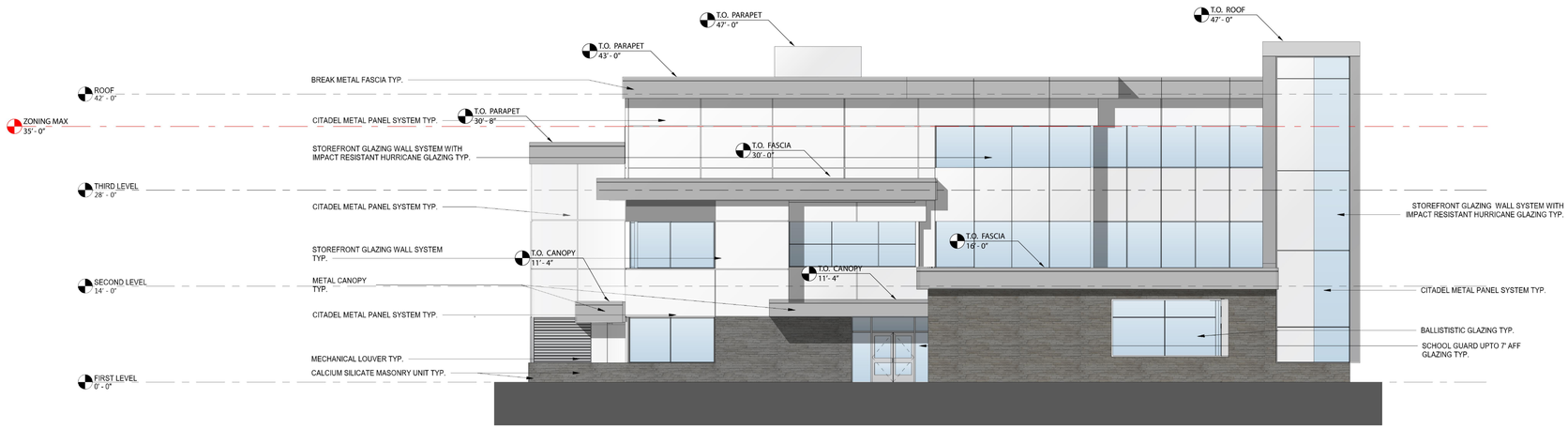
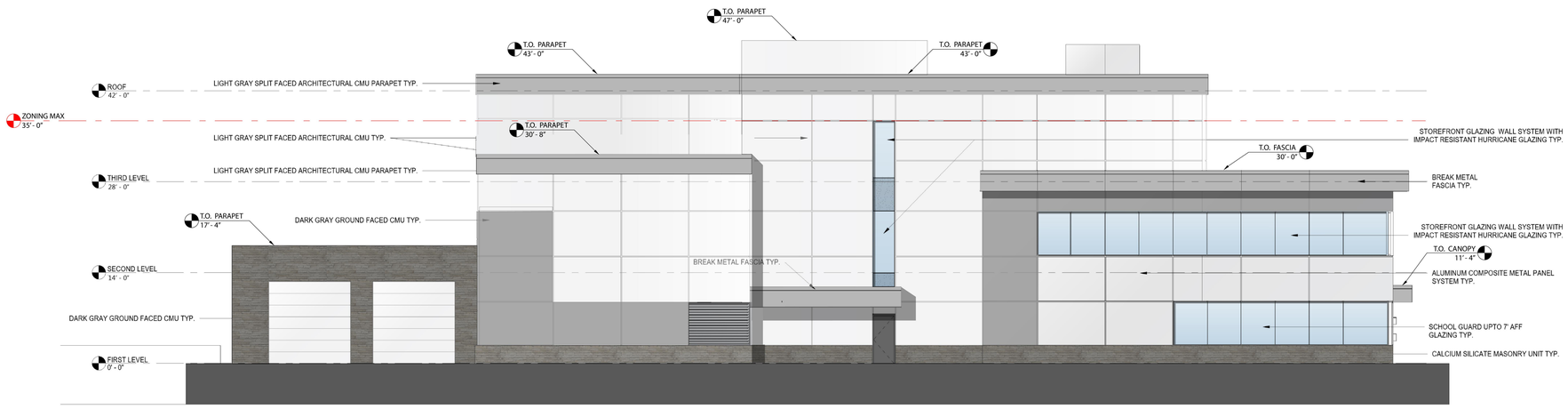


1 WEST ELEVATION
1/8" = 1'-0"



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

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EXTERIOR ELEVATIONS II

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DUCTWORK LEGEND

PLAN

SINGLE–LINE | DOUBLE–LINE

DUCT TURNING DOWN

DUCT TURNING UP

DUCT TURNING UP

DUCT TURNING DOWN

D — DUCT DROP

R — DUCT RISE

D — DUCT DROP

R — DUCT RISE

DUCT TURNING UP

DUCT TURNING DOWN

DUCT TURNING UP

OR

SUPPLY — VD

RETURN

12X6 — 12X12 — 24X12

12X6 — VD — 12X12 — 24X12

12X6 — 8ø — 22X12

8ø — 12ø

FLX — FLEXIBLE CONNECTION (FC)

20X10 — 12X10

VD

HC

HC

12X6 — 8ø — 22X12

FLEXIBLE DUCTWORK (FC)

PIPING PLAN SYMBOLS

GCWS	GROUND LOOP CONDENSER WATER SUPPLY
GCWR	GROUND LOOP CONDENSER WATER RETURN
HWS	HOT WATER SUPPLY
HWR	HOT WATER RETURN
CHWS	CHILLED WATER SUPPLY
CHWR	CHILLED WATER RETURN
PCHWS	PROCESS CHILLED WATER SUPPLY
PCHWR	PROCESS CHILLED WATER RETURN
CWS	CONDENSER WATER SUPPLY
CWR	CONDENSER WATER RETURN
GWS	GLYCOL WATER SUPPLY
GWR	GLYCOL WATER RETURN
LPS	LOW PRESSURE STEAM
LPR	LOW PRESSURE RETURN
MPS	MEDIUM PRESSURE STEAM
MPR	MEDIUM PRESSURE RETURN
HPS	HIGH PRESSURE STEAM
HPR	HIGH PRESSURE RETURN
CW	COLD WATER
PC	PUMPED CONDENSATE
D	DRAIN
V	VENT
GL	GAUGE
G	GAS
FOF	FUEL OIL FILL
FOS	FUEL OIL SUPPLY
FOR	FUEL OIL RETURN
FOV	FUEL OIL VENT
BF	BOILER FEED
BD	BOILER BLOW DOWN
CF	CHEMICAL FEED

PUMP
GATE VALVE
GLOBE VALVE
ANGLE GLOBE
BALL VALVE
NEEDLE VALVE
LOCK SHIELD VALVE
BUTTERFLY VALVE
LUBRICATED PLUG VALVE
FLOW CONTROL BALANCING VALVE
CF — CONSTANT FLOW VALVE
QUICK ACTING VALVE
HOSE END VALVE
AUTOMATIC CONTROL VALVE (TWO WAY)
AUTOMATIC CONTROL VALVE (THREE WAY)
ELECTRIC MOTORIZED AUTOMATIC VALVE
ELECTRIC SLOW ACTING SOLENOID VALVE
ELECTRIC SOLENOID VALVE
RELIEF VALVE OR SAFETY VALVE
PRESSURE REDUCING VALVE
CHECK VALVE
G — PIPE GUIDE
A — PIPE ANCHOR
CONCENTRIC REDUCER
ECCENTRIC REDUCER

MANUAL AIR VENT
AUTOMATIC AIR VENT
VACUUM BREAKER
EXPANSION JOINT
BALL JOINT
FLEXIBLE CONNECTION
UNION
FLANGE
STRAINER ASSEMBLY
PRESSURE GAUGE ASSEMBLY
PRESSURE TEMPERATURE TAP WITH CAP
THERMOMETER WELL
TRAP
TRAP ASSEMBLY
PIPE TURNED UP
PIPE TURNED DOWN

ORIFICE
VENTURI METER ASSEMBLY
M — METER
TURBINE METER ASSEMBLY
VS — VORTEX SHEDDING METER ASSEMBLY
FLOW INDICATING ASSEMBLY
THERMOMETER
FINNED TUBE OR PANEL RADIATION

X-A
A = TYPE
X = LENGTH IN FEET

FINNED–TUBE OR PANEL RADIATION SCHEDULE BOX

A	A = FINNED–TUBE OR PANEL RADIATOR TYPE
B	B = LENGTH
C	C = GPM

1/8" — PITCH DOWN AT 1/8" PER FOOT

CONTROLS AND SENSORS

T — THERMOSTAT
H — HUMIDISTAT
T — TEMPERATURE SENSOR
H — HUMIDITY SENSOR
E — EMERGENCY FAN SHUTDOWN STATION
EB — EMERGENCY BOILER SHUTDOWN STATION
ER — REFRIGERANT PLANT EMERGENCY CONTROLS
ΔP — DIFFERENTIAL PRESSURE SENSOR
M — FLOW METER
SD — SMOKE DETECTOR
FS — FLOW SWITCH
DDC — DDC CONTROL PANEL
LCP — LOCAL CONTROL PANEL
CO_2 — CARBON DIOXIDE SENSOR
CO — CARBON MONOXIDE SENSOR
R — REFRIGERANT SENSOR

MISCELLANEOUS SYMBOLS

FAN (AXIAL)
CENTRIFUGAL FAN
PROPELLER FAN
DUCT UNDER POSITIVE PRESSURE
DUCT UNDER NEGATIVE PRESSURE

(Q) AxB–C–XX — AIR OUTLET LABEL
Q = QUANTITY
AxB = NECK SIZE
C = TYPE
XX = CFM

R — RISE
D — DROP

VD OR VD

FD	FIRE DAMPER
VD	VOLUME DAMPER
AD	AUTOMATIC DAMPER
SD	SMOKE DAMPER
SCD	SMOKE CONTROL DAMPER
FSD	FIRE SMOKE DAMPER
BDD	BACK DRAFT DAMPER
HAD	HALON ACTUATED DAMPER
HFD	HALON ACTUATED FIRE DAMPER

SYMBOL WITH NO MARK IS A MANUAL OBD

SQUARE ELBOW WITH TURNING VANES
FLEXIBLE DUCTWORK, FC
FLEXIBLE CONNECTION, FC
A — TRANSFER OPENING ABOVE HUNG CEILING ("A" SQUARE FEET FREE AREA)
L/A — DOOR LOUVER ("A" CFM)
UC/A — DOOR UNDER CUT ("A" CFM OR INCHES)
X/Z — DETAIL REFERENCE (DETAIL "X" ON DRAWING "Z")
Z/X — SECTION MARK (SECTION "X" ON DRAWING "Z")
REFERENCE LINE
DEMOLISH EXISTING
LIMIT OF DEMOLITION
CONNECT TO EXISTING

HVAC ABBREVIATIONS

A/C	AIR CONDITIONING
ABS	ABSOLUTE
AFF	ABOVE FINISHED FLOOR
ALUM.	ALUMINUM
AMPS	AMPERES
AP	ACCESS PANEL
ATC	AUTOMATIC TEMPERATURE CONTROL
AUTO.	AUTOMATIC
BFC	BELOW FINISHED CEILING
BHP	BRAKE HORSE POWER
BMS	BUILDING MANAGEMENT SYSTEM
BT	BOTTOM THROAT
BTU	BRITISH THERMAL UNIT
CFM	CUBIC FEET PER MINUTE
CI	CAST IRON
CO	CLEAN OUT
D	DEPTH
DB	DRY BULB OR DECIBELS
DDC	DIRECT DIGITAL CONTROL
DEMO	DEMOLISH
DIA	DIAMETER
DN	DOWN
EA	EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE
EDB	ENTERING DRY BULB TEMPERATURE
EP	ELECTRIC PNEUMATIC
EWB	ENTERING WET BULB TEMPERATURE
EWT	ENTERING WATER TEMPERATURE
FA	FREE AREA IN SQUARE FEET
FC	FAIL CLOSED; FLEXIBLE DUCT CONNECTION
FLA	FULL LOAD AMPS
FLX	FLEXIBLE CONNECTION
FO	FAIL OPEN
FPM	FEET PER MINUTE
FPS	FEET PER SECOND
GAL.	GALLON
GALV	GALVANIZED
GC	GENERAL CONTRACTOR
GEN.	GENERATOR
GPH	GALLON PER HOUR
GPM	GALLON PER MINUTE
H	HEIGHT
HB	HOSE BIB
HP	HORSE POWER, HEAT PUMP
HVAC	HEATING VENTILATING AND AIR–CONDITIONING
HZ	HERTZ
IN	INCHES
IN H_2O	INCHES OF WATER
IN W.C.	INCHES OF WATER COLUMN
IN W.G.	INCHES OF WATER GAUGE
K.W.	KILOWATTS
L	LENGTH
LAT	LEAVING AIR TEMPERATURE
LDB	LEAVING DRY BULB TEMPERATURE
LRA	LOCK ROTOR AMPS
LWB	LEAVING WET BULB TEMPERATURE
LWT	LEAVING WATER TEMPERATURE
MER	MECHANICAL EQUIPMENT ROOM
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
NTS	NOT TO SCALE
OA	OUTSIDE AIR
OBD	OPPOSED BLADE DAMPER
OZ	OUNCE
PE	PNEUMATIC ELECTRIC
PH	PHASE
PRV	PRESSURE REDUCING VALVE
PSI	POUNDS PER SQUARE INCH
PSIG	POUNDS PER SQUARE INCH GAUGE
RA	RETURN AIR
RPM	REVOLUTIONS PER MINUTE
S/S	STAINLESS STEEL
SA	SUPPLY AIR
SD	SPLITTER DAMPER
SEC	SECOND
SP	STATIC PRESSURE
SQ. FT.	SQUARE FOOT
STD	STANDARD
SUB	SUB–CONTRACTOR
T	THROAT
TEMP.	TEMPERATURE
T–STAT	THERMOSTAT
TSP	TOTAL STATIC PRESSURE
TT	TOP THROAT
TYP.	TYPICAL
V	VOLTAGE
VAV	VARIABLE AIRFLOW VOLUME
VRF	VARIABLE REFRIGERANT FLOW
W	WIDTH, WEST, WATER
W/	WITH
W/O	WITHOUT
WB	WET BULB
WMS	WIRE MESH SCREEN

EXAMPLE OF EQUIPMENT DESIGNATION:

FCU–1 — EQUIPMENT TYPE: FCU
NUMBER: 1

HVAC GENERAL NOTES

1. THE HVAC CONTRACTOR SHALL BE FAMILIAR WITH ALL CONTRACT DOCUMENTS FOR ALL TRADES AND COORDINATE WITH OTHER CONTRACTORS.
2. THE DRAWINGS ARE DIAGRAMMATIC ONLY; FINAL ROUTING OF DUCTWORK, PIPING AND EQUIPMENT LOCATIONS SHALL BE DETERMINED IN THE FIELD. PROVIDE ALL ADDITIONAL OFFSETS, ELBOWS, ETC., AT NO ADDITIONAL COST TO THE OWNER.
3. CONSTRUCT AND INSTALL ALL DUCTWORK IN ACCORDANCE WITH THE LATEST EDITION OF SMACNA STANDARDS.
4. PROVIDE VOLUME DAMPERS TO SUPPLY, RETURN AND EXHAUST DUCT BRANCHES SO THAT ALL SUPPLY DIFFUSERS, RETURN OR EXHAUST GRILLES CAN BE BALANCED TO INTENDED AIRFLOW, WHETHER VOLUME DAMPERS ARE SHOWN OR NOT.
5. MINIMUM SIZE OF CONDENSER WATER SUPPLY, CONDENSER WATER RETURN AND CONDENSATE DRAIN PIPING SHALL BE 3/4" UNLESS OTHERWISE NOTED.
6. COORDINATE ALL ELECTRICAL PLUMBING AND FIRE PROTECTION REQUIREMENTS WITH THE ELECTRICAL PLUMBING AND FIRE PROTECTION CONTRACTORS.
7. ALL DUCTWORK DIMENSIONS INDICATED ARE CLEAR INSIDE DIMENSIONS. ALL INTERNAL ACOUSTICAL DUCT LINING SHALL HAVE THE AIR SURFACE COATED WITH ACRYLIC COATING FORMULATED WITH IMMOBILIZED EPA REGISTERED ANTI–MICROBIAL AGENT PROVEN TO RESIST MICROBIAL GROWTH AS DETERMINED BY ASTM G21 AND G22.
8. REFER TO ARCHITECTURAL REFLECTED CEILING PLAN OR INTERIOR ELEVATIONS FOR FINAL LOCATIONS OF DIFFUSERS, REGISTERS AND GRILLES.
9. AUTOMATIC TEMPERATURE CONTROL (ATC) CONTRACTOR: COORDINATE THERMOSTAT LOCATIONS WITH THE ARCHITECTURAL FURNITURE PLANS. INSTALL THERMOSTATS 48" ABOVE FINISHED FLOOR UNLESS OTHERWISE NOTED.
10. PROVIDE ALL INCIDENTAL ACCESSORIES NECESSARY TO MAKE THE HVAC WORK COMPLETE AND READY FOR OPERATION.
11. PROVIDE (FURNISH AND INSTALL) ALL HVAC WORK SHALL BE IN ACCORDANCE WITH APPLICABLE FEDERAL, STATE AND LOCAL CODES.
12. INSTALL ALL HVAC EQUIPMENT IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
13. PROVIDE SHUTOFF VALVES IN THE SUPPLY AND RETURN PIPING TO ALL EQUIPMENT TO ALLOW FOR SERVICING. UNIONS OF FLANGES SHALL BE ARRANGED SUCH THAT EQUIPMENT CAN BE SERVICED WITHOUT CUTTING AND MINIMAL DISRUPTION OF PIPING SERVING THE EQUIPMENT.
14. FURNISH TO THE GENERAL CONTRACTOR ALL INFORMATION REQUIRED FOR SETTING OF WALL, ROOF AND PARTITION OPENINGS FOR HVAC WORK. THIS INFORMATION SHALL BE FURNISHED IN A TIMELY MANNER SUCH THAT CONSTRUCTION SCHEDULE IS NOT JEOPARDIZED.
15. FIELD MEASURE THE EXACT SIZES AND VERIFY ALL OPENINGS FOR SHAFTS AND LOUVERS PRIOR TO SUBMISSION OF SHOP DRAWINGS AND INSTALLATION.
16. DUCTWORK AND PIPING INSTALLER SHALL REVIEW EXISTING CONDITIONS BEFORE INSTALLATION, MAKE ADJUSTMENTS WHEN NECESSARY, MAINTAIN MINIMUM HEADROOM, AND REVIEW NECESSARY CHANGES WITH THE ARCHITECT.

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ISSUE DATE

DATE	DESCRIPTION
August 2, 2019	DESIGN DEVELOPMENT ESTIMATE SET
AUGUST 12, 2019	PLANNNING BOARD SUBMISSION

REVISIONS

DATE	DESCRIPTION

FOR ALL ABBREVIATIONS, SYMBOL LEGENDS, AND GENERAL NOTES SEE SHEET R0.01

KEY PLAN

0' 4' 8' 16'
SCALE: 1/8" = 1'-0"
PROJECT TRUE

BEVERLY POLICE DEPARTMENT

175 Elliott Street Beverly, MA 01915

PROJECT NO.:
DRAWN BY: DES

HVAC LEGEND & NOTES

DRAWING NO.:
H000

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WATER-TO-AIR GROUND-SOURCE HEAT PUMP SCHEDULE

UNIT NUMBER	LOCATION	ELECTRICAL DATA @ 60HZ							HEATING PERFORMANCE												COOLING PERFORMANCE										SIMILAR TO	NOTES SEE BELOW
		COMPRESSOR	FAN	TOTAL UNIT FLA	MIN. CIRCUIT AMPS	MAX. FUSE SIZE	VOLTS	PHASE	SOURCE					LOAD							SOURCE					LOAD						
		RLA	FLA						EWT °F	GPM	P. GLYCOL (%)	LWT °F	△P FT. H_2O	EAT °F	LAT °F	CFM	E.S.P. (IN. H_2O)	POWER kW	CAPACITY MBH	COP	EWT °F	GPM	LWT °F	△P FT. H_2O	EAT °F	LAT °F	CFM	POWER kW	SENSIBLE CAPACITY MBH	TOTAL CAPACITY MBH	EER		
HP-1	SEE PLAN	6.5	3.00	9.50	11.1	15	208-230	3	40.0	6.0	20.0	34.8	6.2	72.0	95.2	800	0.30	–	20.2	4.0	85.0	6.0	95.2	5.6	75.0	53.2	800	–	18.9	24.5	15.6	DAIKIN WGTH0261	1, 2, 3, 4, 5
HP-2	SEE PLAN	6.6	3.00	9.40	11.3	15	208-230	1	40.0	4.5	20.0	34.7	9.7	72.0	95.9	600	0.30	–	15.6	3.9	85.0	4.5	94.2	8.8	75.0	55.9	600	–	12.4	16.5	15.0	DAIKIN WGSH0191	1, 2, 3, 4, 5
HP-3	SEE PLAN	6.5	3.00	9.50	11.1	15	208-230	3	40.0	6.0	20.0	34.8	6.2	72.0	95.2	800	0.30	–	20.2	4.0	85.0	6.0	95.2	5.6	75.0	53.2	800	–	18.9	24.5	15.6	DAIKIN WGTH0261	1, 2, 3, 4, 5
HP-4	SEE PLAN	11.6	5.00	16.60	19.5	30	208-230	3	40.0	9.0	20.0	34.5	10.8	72.0	99.0	1090	0.30	–	32.0	4.1	85.0	9.0	95.0	9.9	75.0	53.4	1090	–	25.5	35.9	15.8	DAIKIN WGTH0381	1, 2, 3, 4, 5
HP-5	SEE PLAN	3.0	0.94	3.94	4.69	15	208-230	1	40.0	1.0	20.0	30.1	2.0	72.0	97.2	244	0.30	–	6.7	3.6	85.0	1.0	103.8	1.8	75.0	55.1	244	–	5.3	7.3	14.0	DAIKIN WGSH0071	1, 2, 3, 4, 5
HP-6	SEE PLAN	6.6	3.00	9.40	11.3	15	208-230	1	40.0	4.5	20.0	34.7	9.7	72.0	95.9	600	0.30	–	15.6	3.9	85.0	4.5	94.2	8.8	75.0	55.9	600	–	12.4	16.5	15.0	DAIKIN WGSH0191	1, 2, 3, 4, 5
HP-7	SEE PLAN	11.6	5.00	16.60	19.5	30	208-230	3	40.0	9.0	20.0	34.6	10.9	72.0	95.1	1250	0.30	–	23.5	4.0	85.0	9.0	95.2	9.9	75.0	55.0	1250	–	27.1	36.4	15.6	DAIKIN WGTH0381	1, 2, 3, 4, 5
HP-8	SEE PLAN	7.1	3.00	10.10	11.9	15	208-230	3	40.0	5.5	20.0	34.7	5.3	72.0	101.7	600	0.30	–	19.3	4.1	85.0	5.5	95.7	4.8	75.0	50.2	600	–	16.2	23.7	19.9	DAIKIN WGSH0241	1, 2, 3, 4, 5
HP-9	SEE PLAN	5.6	3.00	8.40	10.0	15	208-230	1	40.0	3.75	20.0	34.6	7.0	72.0	96.3	500	0.30	–	13.2	3.9	85.0	3.75	94.6	6.3	75.0	54.9	500	–	10.9	14.3	15.7	DAIKIN WGSH0151	1, 2, 3, 4, 5
HP-10	SEE PLAN	3.0	0.94	3.94	4.69	15	208-230	1	40.0	1.0	20.0	30.1	2.0	72.0	97.2	244	0.30	–	6.7	3.6	85.0	1.0	103.8	1.8	75.0	55.1	244	–	5.3	7.3	14.0	DAIKIN WGSH0071	1, 2, 3, 4, 5
HP-11	SEE PLAN	3.0	0.94	3.94	4.69	15	208-230	1	40.0	1.0	20.0	30.1	2.0	72.0	97.2	244	0.30	–	6.7	3.6	85.0	1.0	95.7	1.8	75.0	55.1	244	–	5.3	7.3	14.0	DAIKIN WGSH0071	1, 2, 3, 4, 5
HP-12	SEE PLAN	8.7	5.00	13.70	15.88	20	208-230	3	40.0	7.5	20.0	34.5	9.2	72.0	96.8	1000	0.30	–	26.9	3.9	85.0	7.5	95.1	8.4	75.0	54.8	1000	–	21.9	29.9	14.3	DAIKIN WGTH0321	1, 2, 3, 4, 5
HP-13	SEE PLAN	14.0	7.30	21.30	24.8	35	208-230	3	40.0	12.0	20.0	34.8	7.4	72.0	95.5	1600	0.30	–	40.9	3.8	85.0	12.0	94.7	6.7	75.0	55.2	1600	–	34.5	45.8	14.8	DAIKIN WGTH0491	1, 2, 3, 4, 5
HP-14	SEE PLAN	14.0	7.30	21.30	24.8	35	208-230	3	40.0	12.0	20.0	34.8	7.4	72.0	95.5	1600	0.30	–	40.9	3.8	85.0	12.0	94.7	6.7	75.0	55.2	1600	–	34.5	45.8	14.8	DAIKIN WGTH0491	1, 2, 3, 4, 5
HP-15	SEE PLAN	4.7	0.94	5.64	6.82	15	208-230	1	40.0	3.0	20.0	34.5	11.5	72.0	97.1	402	0.30	–	10.9	3.8	85.0	3.0	95.0	10.4	75.0	54.8	402	–	8.8	11.6	13.5	DAIKIN WGSH0121	1, 2, 3, 4, 5
HP-16	SEE PLAN	16.5	9.40	25.90	30.02	45	208-230	3	40.0	15.0	20.0	34.5	11.9	72.0	96.9	2000	0.30	–	54.2	3.9	85.0	15.0	94.9	10.8	75.0	54.6	2000	–	44.2	58.8	14.8	DAIKIN WGTH0641	1, 2, 3, 4, 5
HP-17	SEE PLAN	6.5	3.00	9.50	11.1	15	208-230	3	40.0	6.0	20.0	34.8	6.2	72.0	95.2	800	0.30	–	20.2	4.0	85.0	6.0	95.2	5.6	75.0	53.2	800	–	18.9	24.5	15.6	DAIKIN WGTH0261	1, 2, 3, 4, 5
HP-18	SEE PLAN	6.5	3.00	9.50	11.1	15	208-230	3	40.0	6.0	20.0	35.0	6.2	72.0	102.3	600	0.30	–	19.8	3.8	85.0	6.0	94.9	5.6	75.0	49.9	600	–	16.4	23.8	15.8	DAIKIN WGTH0261	1, 2, 3, 4, 5
HP-19	SEE PLAN	6.5	3.00	9.50	11.1	15	208-230	3	40.0	6.0	20.0	34.8	6.2	72.0	95.2	800	0.30	–	20.2	4.0	85.0	6.0	95.2	5.6	75.0	53.2	800	–	18.9	24.5	15.6	DAIKIN WGTH0261	1, 2, 3, 4, 5
HP-20	SEE PLAN	5.6	3.00	8.40	10.0	15	208-230	1	40.0	3.75	20.0	34.6	7.0	72.0	96.3	500	0.30	–	13.2	3.9	85.0	3.75	94.6	6.3	75.0	54.9	500	–	10.9	14.3	15.7	DAIKIN WGSH0151	1, 2, 3, 4, 5
HP-21	SEE PLAN	8.7	5.00	13.70	15.9	20	208-230	3	40.0	7.5	20.0	34.5	9.2	72.0	96.8	1000	0.30	–	26.9	3.9	85.0	7.5	95.1	8.4	75.0	54.8	1000	–	21.9	29.9	14.3	DAIKIN WGTH0321	1, 2, 3, 4, 5
HP-22	SEE PLAN	14.0	7.30	21.30	24.8	35	208-230	3	40.0	12.0	20.0	34.8	7.4	72.0	95.5	1600	0.30	–	40.9	3.8	85.0	12.0	94.7	6.7	75.0	55.2	1600	–	34.5	45.8	14.8	DAIKIN WGTH0491	1, 2, 3, 4, 5
HP-23	SEE PLAN	4.7	0.94	5.64	6.8	15	208-230	1	40.0	3.0	20.0	34.5	11.5	72.0	97.1	402	0.30	–	10.9	3.8	85.0	3.0	95.0	10.4	75.0	54.8	402	–	8.8	11.6	13.5	DAIKIN WGSH0121	1, 2, 3, 4, 5

NOTES:
1. REFER TO DUCTWORK PLAN FOR RIGH OR LEFT HAND RETURN DUCT CONNECTION.
2. PROVIDE FACTORY MOUNTED MICRO TECH III CONTROLLER.
3. SPACE THERMOSTAT TO BE PROVIDED BY ATC CONTRACTOR.
4. PROVIDE 2" FOUR-SIDED FILTER RACK AND MERV 13 FILTERS.
5. PROVIDE ECM FAN MOTOR.

WATER-TO-WATER GROUND-SOURCE HEAT PUMP SCHEDULE (HEATING ONLY)

UNIT NUMBER	LOCATION		COMPRESSOR DATA			LOAD PUMP	SOURCE PUMP	TOTAL UNIT FLA	MIN. CIRCUIT AMPS	MAX. FUSE/HACR	HEATING PERFORMANCE												NOTES SEE BELOW
											SOURCE			LOAD									
		RATED VOLTAGE	RLA	LRA	LRA*						EWT °F	GPM	P. GLYCOL (%)	LWT °F	△P FT. H_2O	EWT °F	LWT °F	GPM	P. GLYCOL (%)	△P FT. H_2O	POWER kW	CAPACITY MBH	COP	
HP-A	MECH ROOM	208/60/1	25.8	178.0	–	1.8	5.4	33.0	39.5	60	40	15.0	20%	35.8	9.9	130	142.9	17.5		7.2	7.24	64.2	2.6	1.
HP-B	MECH ROOM	208/60/1	25.8	178.0	–	1.8	5.4	33.0	39.5	60	40	15.0	20%	35.8	9.9	130	142.9	17.5		7.2	7.24	64.2	2.6	1.

NOTES:
1. SELECTION BASED ON WATER FURNACE MODEL NEW066.

SPLIT TYPE A/C UNIT CONDENSING UNIT (OUTDOOR)

SYMBOL	LOCATION	COOLING				POWER				EFFICIENCY	PIPING	REFRIGERANT	SIMILAR TO	NOTES
		O.A. TEMP. °F	CAPACITY BTU/HR	INPUT POWER kW	OPERATING RANGE °F DB	VOLT/PH/HZ	RLA A	MFA A	MCA A	SEER	LONGEST EQUIVALENT LENGTH FT			
ACCU-1	ON ROOF	91	24,000	–	0 – 115	208-230/1/60	7.1	20	16.5	18.6	164	R-410A	DAIKIN RZR24PVJU	1.

NOTES:
1. ACCU-2 CONNECTS TO INDOOR UNIT AC-1.

SPLIT TYPE A/C UNIT EVAPORATOR UNIT (INDOOR)

SYMBOL	LOCATION	ROOM TEMP. °F / RH%	AIRFLOW CFM HI-MI-LO	SOUND PRESSURE dBA	POWER			PROVIDE CONDENSATE PUMP	PROVIDE WALL-MOUNT CONTROLLER/T-STAT	CONNECT TO OUTDOOR UNIT	SIMILAR TO	NOTES
					VOLT/PH/HZ	MCA	MFA					
AC-1	IT ROOM	80.0 / 50%	800/400	43	208-230/1/60	0.4	15	YES	YES	ACCU-2	DAIKIN FAQ24PVJU	1

NOTES:
1. PROVIDE WALL-MOUNT THERMOSTAT AND REMOTE CONTROLLER.

ENERGY RECOVERY VENTILATOR

UNIT NUMBER	LOCATION	OUTSIDE AIR									EXHAUST AIR								ENERGY RECOVERY WHEEL				SEE CONTINUED SCHEDULE
		BLOWER		BLOWER ELECTRICAL		ENERGY WHEEL HEATING PERFORMANCE		ENERGY WHEEL COOLING PERFORMANCE		FILTERS	BLOWER		BLOWER ELECTRICAL		ENERGY WHEEL HEATING PERFORMANCE		ENERGY WHEEL COOLING PERFORMANCE		EFFECTIVENESS				
																			WINTER		SUMMER		
		CFM	EXT. S.P. IN W.C.	VOLT/PH/HZ	MOTOR SIZE HP	EAT DB/WB °F	LAT DB/WB °F	EAT DB/WB °F	LAT DB/WB °F		CFM	EXT. S.P. IN W.C.	VOLT/PH/HZ	MOTOR SIZE HP	EAT DB/WB °F	LAT DB/WB °F	EAT DB/WB °F	LAT DB/WB °F	OUTSIDE AIR	EXHAUST AIR	OUTSIDE AIR	EXHAUST AIR	
ERV-1	ROOF	6000	2.0	208/3/60	15	7.4/5.3	48.9/42.2	90.8/76.2	80.5/68.0	MERV 13	4800	1.5	208/3/60	5.0	72.0/55.9	18.7/17.6	75.0/62.5	87.9/73.7	65.8%	82.3%	64.2%	80.3%	

ENERGY RECOVERY VENTILATOR (CONTINUED: INTEGRAL GROUND-SOURCE HEAT PUMP)

UNIT NUMBER		REFRIGERANT	UNIT ELECTRICAL DATA @ 60 HZ							OUTSIDE AIR CFM	HEATING PERFORMANCE									COOLING PERFORMANCE										SIMILAR TO	NOTES
			COMPRESSOR STAGES	RLA	LRA	MIN. CIRCUIT AMPS	MAX. FUSE SIZE	VOLTS	PHASE		SOURCE			LOAD						SOURCE			LOAD								
											EWT °F	GPM	P. GLYCOL (%)	LWT °F	△P FT. H_2O	EAT °F	LAT °F	AIRSIDE COIL CAPACITY (MBH)	UNIT CAPACITY W/ ENERGY WHEEL (MBH)	EWT °F	GPM	LWT °F	△P FT. H_2O	EAT DB/WB °F	LAT DB/WB °F	AIRSIDE COIL CAPACITY TOTAL CAPACITY (MBH)	AIRSIDE COIL CAPACITY SENSIBLE (MBH)	UNIT CAPACITY W/ ENERGY WHEEL (MBH)		
ERV-1(CONTINUED SCHEDULE)		R-410A	2	–	–	134.9	175	208	3	6000	40.0	49	20	35.6	15.3	48.9	70.7	141.4	410.3	85.0	49	95.2	15.3	80.5/68.0	59.0/57.6	202.6	141.9	400.8	GREENHECK ERCH-55-30L	SEE BELOW

NOTES:
1. PROVIDE MICROPROCESSOR CONTROLS BASED ON BACnetIP. PROVIDE BACnetIP INTERFACE TO INTERFACE WITH DDC BMS.
2. PROVIDE MOTORIZED, INSULATED LOW LEAKAGE O.A. SUPPLY & EXHAUST DAMPERS.
3. PROVIDE DIRTY FILTER SENSOR FOR O.A.
4. PROVIDE SPARE ENERGY WHEEL BELT, BELTS FOR O.A. & E.A. FANS, ENERGY WHEEL SEGMENT, FINAL FILTERS, (1) SET OF EACH.
5. PROVIDE VAPOR TIGHT LIGHTS; PROVIDE SERVICE OUTLET.
6. PROVIDE WHEEL ROTATION SENSOR; PROVIDE AUTOMATIC FROST CONTROL.
7. PROVIDE SINGLE POINT POWER CONNECTION.
8. PROVIDE ROOF CURB.

AIR DISTRIBUTION DEVICE SCHEDULE

UNIT NUMBER	SERVICE	AIR PATTERN	NOMINAL FACE SIZE	NECK SIZE	MATERIAL	ACCESSORIES	SIMILAR TO	NOTES
A	CEILING SUPPLY	ONE WAY BLOW	24"x24" LAY-IN	AS NOTED	STEEL	SEE NOTES	PRICE MODEL SMX	1, 2, 3, 4
B	CEILING SUPPLY	TWO WAY (90°) BLOW	24"x24" LAY-IN	AS NOTED	STEEL	SEE NOTES	PRICE MODEL SMX	1, 2, 3, 4
C	CEILING SUPPLY	TWO WAY (180°) BLOW	24"x24" LAY-IN	AS NOTED	STEEL	SEE NOTES	PRICE MODEL SMX	1, 2, 3, 4
D	CEILING SUPPLY	THREE WAY BLOW	24"x24" LAY-IN	AS NOTED	STEEL	SEE NOTES	PRICE MODEL SMX	1, 2, 3, 4
E	CEILING SUPPLY	FOUR WAY BLOW	24"x24" LAY-IN	AS NOTED	STEEL	SEE NOTES	PRICE MODEL SMX	1, 2, 3, 4
F	CEILING RETURN/EXHAUST	N/A	24"x24" LAY-IN	AS NOTED	STEEL	SEE NOTES	PRICE MODEL 530	1, 2, 3, 4, 5
G	SIDE WALL SUPPLY	ADJUSTABLE	SEE PLANS	AS NOTED	STEEL	WITH OBD	PRICE MODEL 520D	1, 3
H	SIDE WALL RETURN/EXHAUST	SEE NOTE 5.	SEE PLANS	AS NOTED	STEEL	SEE NOTES	PRICE MODEL 530	1, 3, 5
I	LINEAR CEILING SUPPLY	ADJUSTABLE	SEE PLANS	AS NOTED	ALUMINUM	SEE NOTES	PRICE MODEL SDS	1, 6
J	LINEAR FLOOR SUPPLY	ADJUSTABLE	SEE PLANS	AS NOTED	ALUMINUM	SEE NOTES	PRICE MODEL LBMH 15A	1, 2, 3, 4
K	FLOOR RETURN	N/A	SEE PLANS	AS NOTED	STEEL	SEE NOTES	PRICE MODEL LBMH 15A	1, 2, 3, 4, 5
S	CEILING SUPPLY	N/A	SEE PLANS	AS NOTED	STEEL	SEE NOTES	KEES SEG-9SP2 SECURITY GRILLE	
T	CEILING RETURN / EXHAUST	N/A	SEE PLANS	AS NOTED	STEEL	SEE NOTES	KEES SEG-9SP2 SECURITY GRILLE	

NOTES:
1. COORDINATE WITH ARCHITECTURAL REFLECTED CEILING PLAN AND FLOOR PLAN FOR PROPER DIFFUSER FRAME TYPE.
2. PROVIDE OPPOSED BLADE DAMPERS ONLY IN NON-ACCESSIBLE (SHEETROCK ETC.) CEILINGS.
3. ALL AIR DISTRIBUTION DEVICES SHALL BE COORDINATED W/ ARCHITECT FOR FRAME TYPE, COLOR, ETC.
4. WHEN CEILING MODULE EXCEEDS NECK SIZE BY MORE THAN 6", PROVIDE A LAY-IN PANEL.
5. TO PROVIDE MAXIMUM GRILLE RETURN AIR CAPACITY, RETURN GRILLES SHALL BE WITHOUT AIR PATTERN CONTROLLERS.
6. LINEAR SLOT DEVICE MANUFACTURER SHALL PROVIDE MATCHING PLENUM BOOT PER EACH DEVICE.

CABINET & UNIT HEATER SCHEDULE

UNIT NUMBER	LOCATION	FAN				MOTOR DATA @ 60 HZ				HOT WATER COIL				STEAM COIL		ELECTRIC COIL		MBH	SIMILAR TO	NOTES SEE BELOW
		SPEED SETTING	CFM	RPM	EXT SP	HP	RPM	VOLTS	PHASE	EWT °F	LWT °F	GPM	△PRESS FT. H_2O	INLET PSIG	#/HR	VOLTS	KW			
EUH-1	SEE PLANS	–	700	1550	0.0	1/50	1550	208	3	–	–	–	–	–	–	208	7.5	–	TRANE UHEC-072	1, 2, 3
EUH-2	SEE PLANS	–	400	1550	0.0	1/125	1550	208	3	–	–	–	–	–	–	208	5.0	–	TRANE UHEC-052	1, 2, 3
EUH-3	SEE PLANS	–	400	1550	0.0	1/125	1550	208	3	–	–	–	–	–	–	208	3.3	–	TRANE UHEC-032	1, 2, 3

NOTES:
1. PROVIDE UNIT MOUNTED TAMPERPROOF THERMOSTAT.
2. PROVIDE UNIT MOUNTED DISCONNECT SWITCH.
3. CONTROL VOLTAGE SHALL BE 24V.

FAN SCHEDULE

UNIT NUMBER	LOCATION	SERVICE	CFM	S.P. (IN. H_2O)	FAN RPM	MOTOR DATA @ 60 HZ				MANUFACTURER & MODEL	NOTES
						POWER (HP)	RPM	VOLTS	PHASE		
EF-1	SALLYPORT ROOF	SALLYPORT EXHAUST	1000	0.25	1710	1/6	1725	115	1	GREENHECK G-095-VG	
EF-2	HIGH ROOF	EVIDENCE LAB FUME HOOD	500	0.5	980	1/4	1725	115	1	GREENHECK FJC-312-BI	
EF-3	HIGH ROOF	DRUG STORAGE	100	0.25	742	1/4	1725	115	1	GREENHECK FJC-307-BI	
EF-4	HIGH ROOF	WEAPONS CLEANING	200	0.25	823	1/4	733	115	1	GREENHECK FJC-308-BI	

NOTES:
1. –

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ISSUE DATE

DATE	DESCRIPTION
August 2, 2019	DESIGN DEVELOPMENT ESTIMATE SET
AUGUST 12, 2019	PLANNNING BOARD SUBMISSION

REVISIONS

DATE	DESCRIPTION

FOR ALL ABBREVIATIONS, SYMBOL LEGENDS, AND GENERAL NOTES SEE SHEET R0.01

KEY PLAN

0' 4' 8' 16'
SCALE: 1/8" = 1'-0"
PROJECT TRUE

BEVERLY POLICE DEPARTMENT

175 Elliott Street Beverly, MA 01915

PROJECT NO.:
DRAWN BY: DES

HVAC SCHEDULES (1)

DRAWING NO.:
H001

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WATER PUMP SCHEDULE

UNIT NUMBER	LOCATION	SERVICE	TYPE	GPM	TOTAL HEAD (FT. H_2O)	MAX NPSH (FT. H_2O)	MOTOR DATA @ 60 HZ					SIMILAR TO	NOTES SEE BELOW
							BHP	MHP	RPM	VOLTS	PHASE		
P-1	MECH ROOM	GROUND LOOP	IN-LINE	225	85	7.53	6.85	10	1800	208	3	B&G e-80	1, 2
P-2	MECH ROOM	GROUND LOOP (STAND-BY)	IN-LINE	225	85	7.53	6.85	10	1800	208	3	B&G e-80	1, 2
P-3	MECH ROOM	CIRCULATOR BETWEEN HP-A&B & HX-1	IN-LINE	35	23	-	-	0.75	1725	208	3	B&G PD37	3, 4
P-4	MECH ROOM	CIRCULATOR BETWEEN HX-1 & STORAGE TANK ST-1	IN-LINE	30	11	-	-	0.25	1725	208	1	B&G PD35	3, 4

NOTES:
1. WATER HAS 20% PROPYLENE GLYCOL.
2. W/ VFD.
3. W/ ECM MOTOR.
4. PROVIDE SPARE PUMP.

VARIABLE FREQUENCY DRIVE SCHEDULE

NUMBER	DRIVEN EQUIPMENT	HORSEPOWER	VOLTS	PHASE	SIMILAR TO	NOTES
VFD-P-1	P-1	10	208	3	SEE SPEC	1.
VFD-P-2	P-2	10	208	3	SEE SPEC	1.

NOTES:
1. --

TANK SCHEDULE

UNIT NUMBER	LOCATION	SYSTEM SERVED	INITIAL CHARGE (PSIG)	TANK CAPACITY (GALLONS)	ACCEPTANCE VOLUME (GALLONS)	STYLE	TANK HEIGHT (IN.) X DIA. (IN.)	TANK FITTING	RELIEF VALVE SETTING (PSIG)	REDUCING VALVE SETTING	SIMILAR TO	NOTES SEE BELOW
ET-1	MECH ROOM	GROUND LOOP / CONDENSER WATER	12	68	34	VERTICAL	43-7/8 x 24	1" NPTF	N/A	N/A	B&G D-120V	1, 2
ET-2	MECH ROOM	DOMESTIC HOT WATER HEATING HEAT PUMP SIDE	12	5	-	-	-	3/4"	N/A	N/A	B&G	1, 2
ST-1	MECH ROOM	DOMESTIC HOT WATER STORAGE	-	257	-	VERTICAL	87 x 30	(3) 3"NPT, (1) 2"NPT, (1) 1-1/4", (1) 3/4"NPT, (1) 1" DRAIN	N/A	N/A	A.O. SMITH HD*30-250A	3

NOTES:
1. ASME RATED CONSTRCUTION.
2. EXPANSION TANK.
3. DOMESTIC HOT WATER STORAGE TANK, VERTICAL.

AIR SEPARATOR SCHEDULE

UNIT NUMBER	LOCATION	SYSTEM SERVED	FLOW (GPM)	SIZE HEIGHT (IN.) X DIA. (IN.)	△PRESS FT. H_2O	STRAINER	SIMILAR TO	NOTES SEE BELOW
AS-1	MECH ROOM	GROUND LOOP / CONDENSER WATER	225	26-7/8 x 14	0.8	YES	B&G RL-3NB	1, 2
AS-2	MECH ROOM	DOMESTIC HOT WATER HEATING HEAT PUMP SIDE	35	8-1/8 x 4	-	-	B&G IAS-2	

NOTES:
1. SEE MANUFACTURER'S INSTRUCTIONS ON STRAINER INSTALLATION AND CLEANING.
2. ASME RATED CONSTRUCTION.

PLATE & FRAME HEAT EXCHANGER SCHEDULE

UNIT NUMBER	LOCATION	SERVICE	HEAT TRANSFER CAPACITY BTU/HR	MIN. NO. OF PLATES	SIDE A							SIDE B							SIMILAR TO	NOTES SEE BELOW
					EWT °F	LWT °F	GPM	△PRESS FT. H_2O	FLUID	FOULING FACTOR	PRES. RATING	EWT °F	LWT °F	GPM	△PRESS FT. H_2O	FLUID	FOULING FACTOR	ASME PRES. RATING		
HX-1	MECH ROOM	DOMESTIC HOT WATER	137,300	18	138.0	130.0	35	12.0	WATER	0.000026	150 PSIG	120.0	129.3	30	11.0	WATER	0.000026	150 PSIG	ALFA LAVAL A02-MDFG	

NOTES:

CONDENSATE PUMP SCHEDULE

UNIT NUMBER	SERVICE	TYPE	GPM	TOTAL HEAD (FT. H_2O)	MAX NPSH	MOTOR DATA @ 60 HZ				SIMILAR TO	NOTES SEE BELOW
						MHP	RPM	VOLTS	PHASE		
CP-1	SEE PLANS	AUTOMATIC	0.8	10	-	1/30	-	115	1	LITTLE GIANT VCMA-20UL 554421	1,2

NOTES:
1. WITH BARBED CHECK VALVE.
2. -

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KEY PLAN

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SCALE: 1/8" = 1'-0"
PROJECT TRUE

BEVERLY POLICE DEPARTMENT

175 Elliott Street Beverly, MA 01915

PROJECT NO.:

DRAWN BY: DES

HVAC SCHEDULES (2)

DRAWING NO.:
H002

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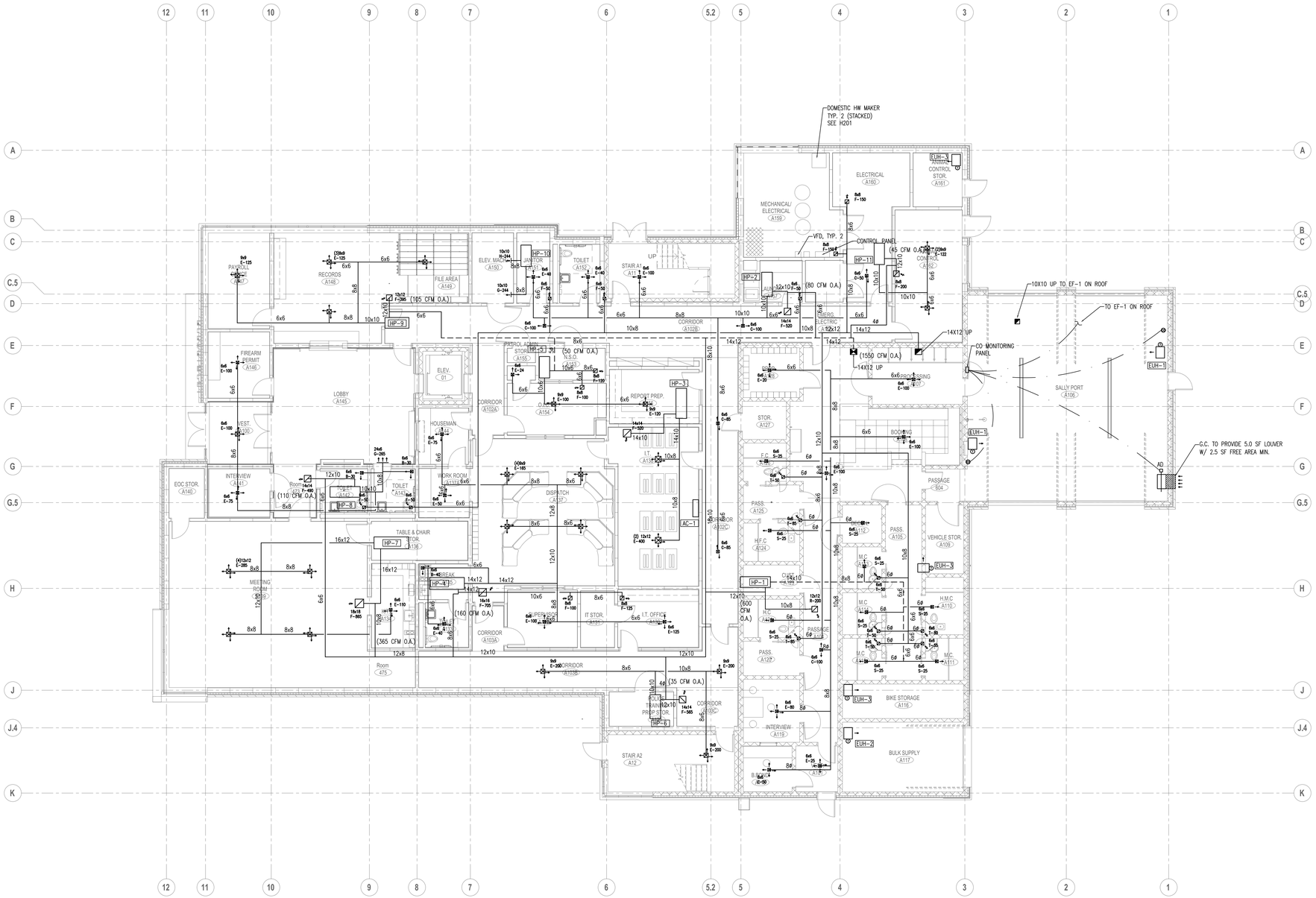

1 FIRST FLOOR
1/8" = 1'-0"

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SCALE: 1/8" = 1'-0"
PROJECT TRUE

BEVERLY POLICE DEPARTMENT

175 Elliott Street Beverly, MA 01915

PROJECT NO.: DRAWN BY: DES

HVAC FIRST FLOOR DUCTWORK PLAN

DRAWING NO.:
H101

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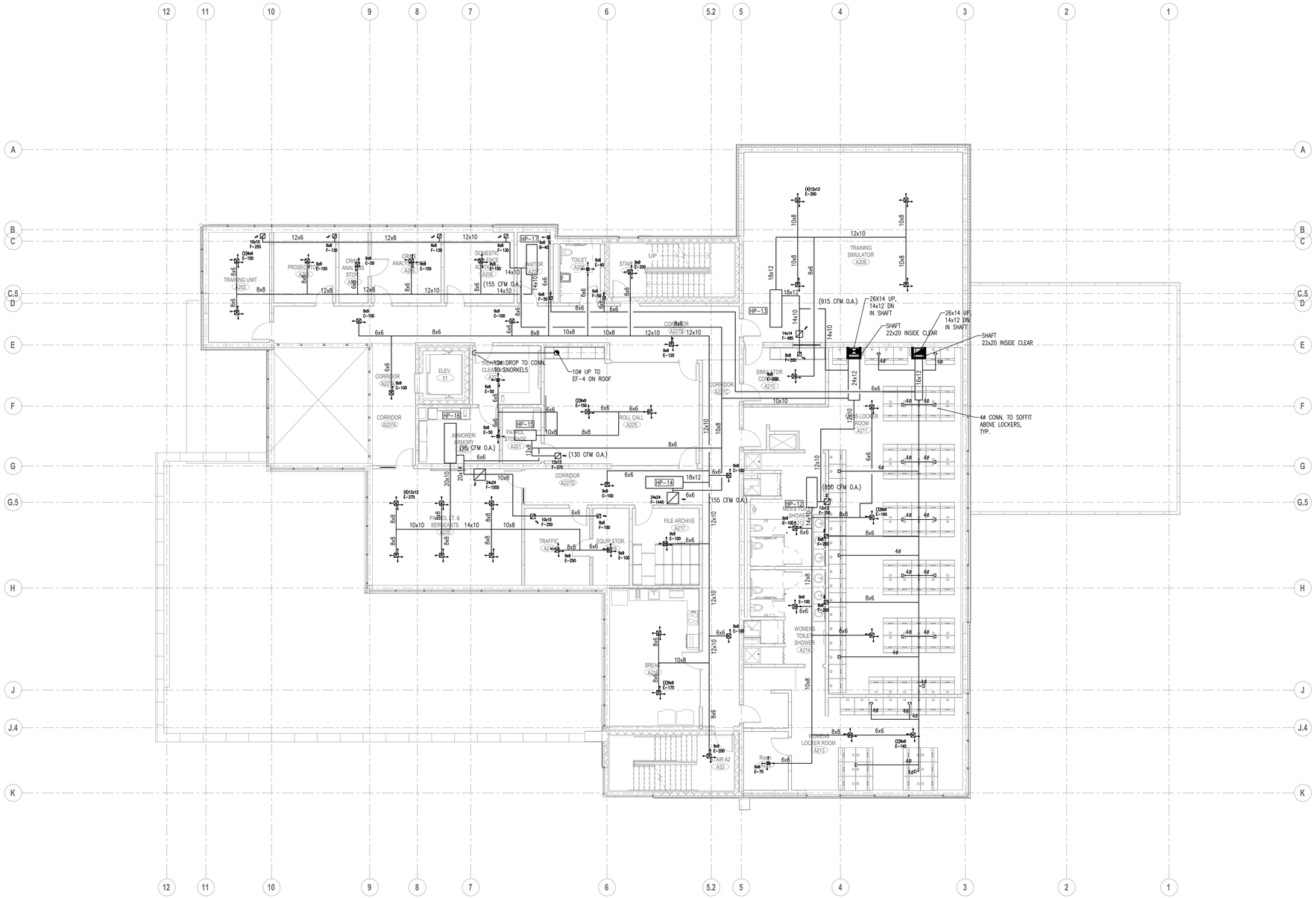

1 SECOND FLOOR
1/8" = 1'-0"

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KEY PLAN

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SCALE: 1/8" = 1'-0"
PROJECT TRUE

BEVERLY POLICE DEPARTMENT

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PROJECT NO.: DRAWN BY: DES

HVAC SECOND FLOOR DUCTWORK PLAN

DRAWING NO.:
H102

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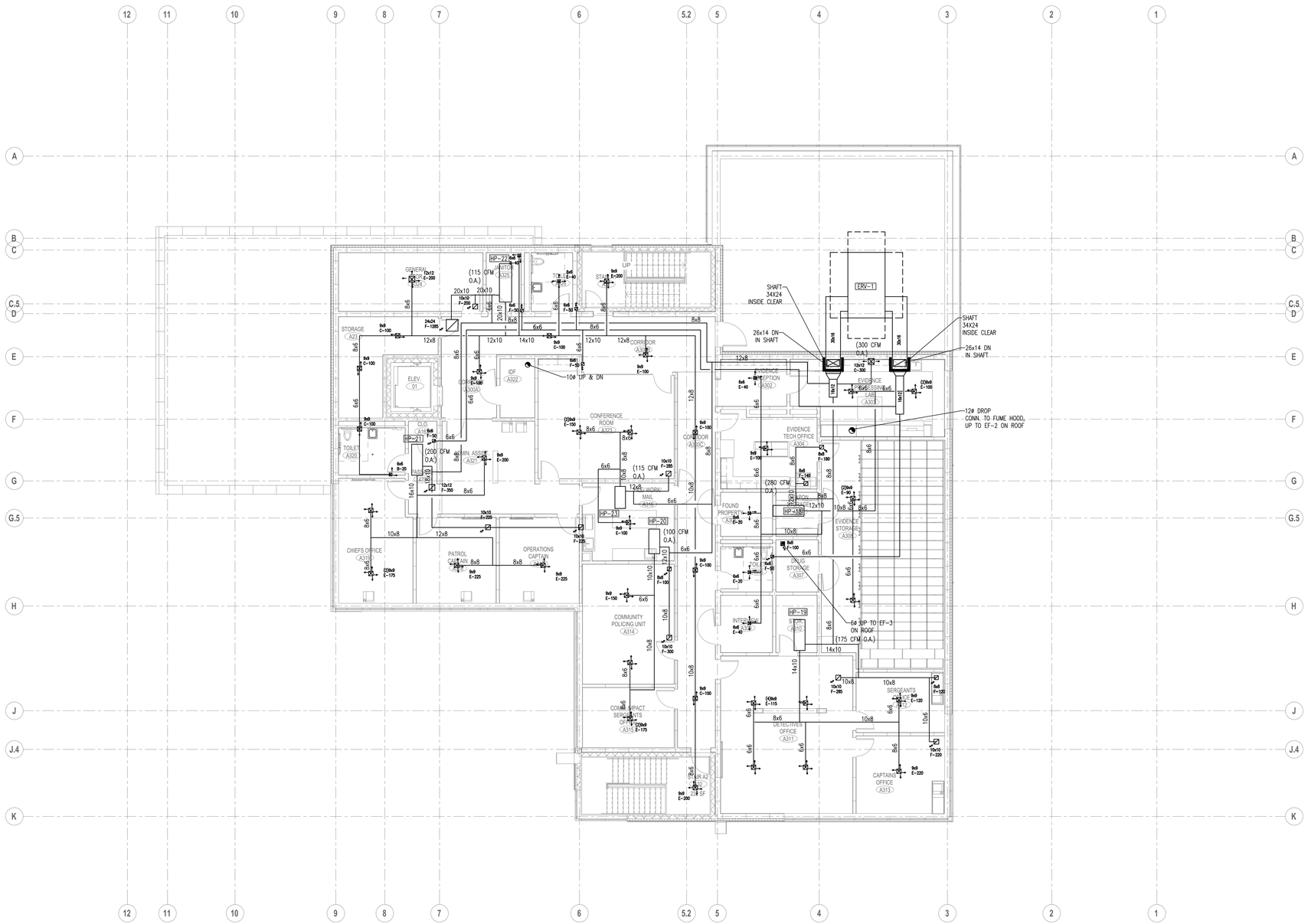

1 THIRD FLOOR
1/8" = 1'-0"

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BEVERLY POLICE DEPARTMENT

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PROJECT NO.: DRAWN BY: DES

HVAC THIRD FLOOR DUCTWORK PLAN

DRAWING NO.:
H103

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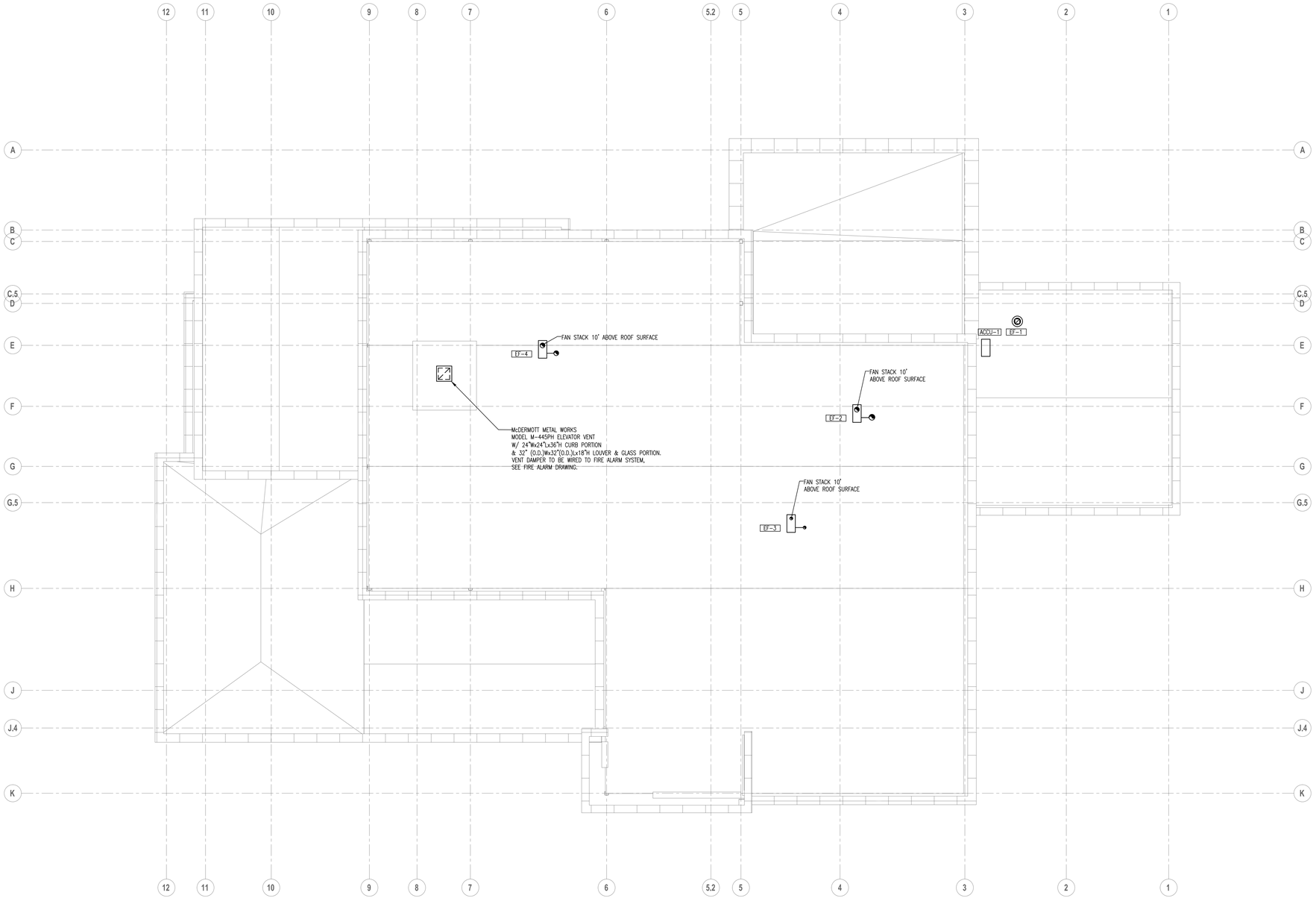

1 ROOF PLAN
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BEVERLY POLICE DEPARTMENT

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PROJECT NO.:
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HVAC ROOF DUCTWORK PLAN

DRAWING NO.:
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