TOWN OF GRAFTON, MASSACHUSETTS

VILLAGE AT GRAFTON WOODS

PERMIT DRAWING SET

FEBRUARY 26, 2021

LIST OF DRAWINGS		
SHEET NO.	DRAWING NO.	DRAWING TITLE
GENERAL		
1	G-001	COVER SHEET
2	G-002	STANDARD LEGEND, ABBREVIATIONS AND NOTES
3	G-003	STANDARD NOTES
CIVIL		
4	C-100	OVERALL EXISTING CONDITIONS SITE PLAN
5	C-101	EXISTING CONDITIONS AND SITE DEMOLITION PLAN - 1
6	C-102	EXISTING CONDITIONS AND SITE DEMOLITION PLAN - 2
7	C-103	SITE LAYOUT AND MATERIALS PLAN - 1
8	C-104	SITE LAYOUT AND MATERIALS PLAN - 2
9	C-105	GRADING, DRAINAGE AND EROSION CONTROL PLAN - 1
10	C-106	GRADING, DRAINAGE AND EROSION CONTROL PLAN - 2
11	C-107	UTILITIES SITE PLAN - 1
12	C-108	UTILITIES SITE PLAN - 2
13	C-109	LANDSCAPING PLAN - 1
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15	C-501	SITE DETAILS - 1
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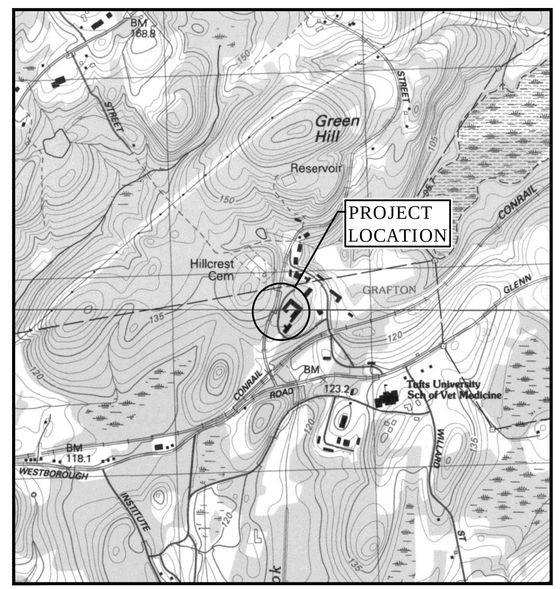
17	C-503	SITE DETAILS - 3
18	C-504	SITE DETAILS - 4
19	C-505	SITE DETAILS - 5
20	C-506	SITE DETAILS - 6
21	C-507	SITE DETAILS - 7
22	C-508	SITE DETAILS - 8
23	C-509	SITE DETAILS - 9



LOCATION MAP
SCALE: 1" = 1000'

PREPARED BY:

Tighe&Bond

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PREPARED FOR:
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PERMIT SET
NOT FOR CONSTRUCTION
COMPLETE SET 23 SHEETS

LEGEND

DESCRIPTION	EXISTING	PROPOSED
PROPERTY LINE		
RIGHT-OF-WAY LINE		
EASEMENT LINE		
LIMITS OF WORK		
INTERMEDIATE CONTOURS		
INDEX CONTOURS	25	25
SPOT GRADE	X 141.2	302.00
MAGNITUDE & DIRECTION OF SLOPE		0.0%
STORM DRAIN	D	SD
STORM UNDERDRAIN		UD
GRAVITY SANITARY SEWER	S	SS SS
SANITARY SEWER FORCE MAIN	SFM	SFM
SANITARY SEWER LOW PRESSURE	SSLP SSLP	SSLP
SANITARY SEWER COMBINED	COMB	COMB
WATER SERVICE	W(R) W W	W W
POTABLE WATER	PW	PW PW
FIRE SERVICE		F F
HIGH PRESSURE FIRE SERVICE		F-HP F-HP
UNDERGROUND ELECTRIC	E E	E E
OVERHEAD ELECTRIC	OE OE	OE OE
TELEPHONE SERVICE	T T	T T
TEL-DATA SERVICE	T–D T–D	T-D T-D
COMMUNICATIONS SERVICE	T–C T–C	T-C T-C
CABLE TV SERVICE	CTV CTV	CTV CTV
GAS SERVICE	G G	G G
OVERHEAD UTILITY (UNSPECIFIED)	OHW OHW	
CURB		
EDGE OF PAVEMENT		
DIRT ROAD		
SIDEWALK		
RETAINING WALL		
STONE WALL		
FENCE - UNSPECIFIED	X X X	X X X
FENCE - CHAIN LINK		
FENCE - WOOD POST		
GUARDRAIL		
METAL BEAM RAIL		
TRAIN TRACKS		
STORM DRAIN STRUCTURES	MANHOLE D CATCH BASIN CB	MANHOLE AREA DRAIN CATCH BASIN
SANITARY SEWER MANHOLE	S	
WATER SERVICE STRUCTURES	HYDRANT MANHOLE R VALVE	HYDRANT MANHOLE W VALVE
GAS SERVICE STRUCTURES	MANHOLE G VALVE GG	MANHOLE G VALVE
ELECTRIC SERVICE STRUCTURES	UTILITY POLE MANHOLE E LIGHT	UTILITY CO. POLE # MANHOLE E LIGHT
TELECOMMUNICATIONS MANHOLE	T	T
TREELINE	EVERGREEN DECIDUOUS	EVERGREEN DECIDUOUS
TREE		

LEGEND

RESOURCE AREAS	
VEGETATED WETLAND LIMIT	
TOP OF BANK	
100-FOOT BUFFER ZONE	
25-FOOT BUFFER ZONE	
WETLAND FLAG	WF

LEGEND

DEMOLITION / GEOTECHNICAL	
EROSION & SEDIMENT CONTROL	
UTILITY TO BE ABANDONED	
UTILITY TO BE DEMOLISHED	
ITEM TO BE DEMOLISHED	
TEST PIT	
MONITORING WELL	
SOIL SAMPLE	
BORING	

ABBREVIATIONS

ABDN('D)	ABANDON(ED)
AC	ASBESTOS CEMENT PIPE
BC	BITUMINOUS CURB
BFP	BACK FLOW PREVENTOR
BIT	BITUMINOUS
BL	BASELINE
BLDG	BUILDING
BND	BOUND
BOC	BOTTOM OF CURB
BOT	BOTTOM
BS	BOTTOM OF STEP
BW	BOTTOM OF WALL
CATV	CABLE TELEVISION
CB	CATCH BASIN
CEM	CEMENT
CI	CAST IRON PIPE
CL	CENTERLINE
CLF	CHAIN LINK FENCE
CO	CLEAN OUT
CONC	CONCRETE
CPP	CORRUGATED POLYETHYLENE PIPE
CY	CUBIC YARD
DH	DRILL HOLE
DI	DUCTILE IRON PIPE
DIA	DIAMETER
DMH	DRAIN MANHOLE
DYCL	DOUBLE YELLOW CENTER LINE
E	EAST
EF	EACH FACE
EG	EXISTING GRADE
EL/ELEV	ELEVATION
ELEC	ELECTRIC
EMH	ELECTRIC MANHOLE
EOP	EDGE OF PAVEMENT
EW	EACH WAY
EXIST	EXISTING
FES	FLARED END SECTION
FF	FINISH FLOOR
FM	FORCE MAIN
G	GAS
GG	GAS GATE
GRAN	GRANITE
HC	HANDICAP
HDPE	HIGH DENSITY POLYETHYLENE
HMA	HOT MIX ASPHALT
HYD	HYDRANT
IN	INCHES
INV	INVERT
IP	IRON PIN
L	LENGTH OF CURB
LP	LIGHT POLE
LT	LEFT
MAX	MAXIMUM
MH	MANHOLE
MIN	MINIMUM
MISC	MISCELLANEOUS
MON	MONUMENT
MJ	MECHANICAL JOINT

ABBREVIATIONS CONT'D

N	NORTH
NITC	NOT IN THIS CONTRACT
NTS	NOT TO SCALE
N/A	NOT APPLICABLE
N/F	NOW OR FORMERLY
OC	ON CENTER
OCS	OUTLET CONTROL STRUCTURE
OH	OVERHEAD
PB	PLANT BED
PC	POINT OF CURVATURE
PCC	POINT OF COMPOUND CURVATURE
PCPP	PERFORATED CORRUGATED POLYETHYLENE PIPE
PERF	PERFORATED
PI	POINT OF INTERSECTION
PRC	POINT OF REVERSE CURVATURE
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PT	POINT OF TANGENCY
PVC	POLYVINYLCHLORIDE
PVMT	PAVEMENT
R	RADIUS
RCP	REINFORCED CONCRETE PIPE
RD	ROOF DRAIN
REV	REVISION
ROW	RIGHT OF WAY
RT	RIGHT
R&D	REMOVE AND DISPOSE
R&R	REMOVE AND RESET
R&S	REMOVE AND STACK
S	SOUTH
SAN	SANITARY
SCH	SCHEDULE
SF	SQUARE FOOT
SMH	SEWER MANHOLE
SS	STAINLESS STEEL
STA	STATION
STL	STEEL
STRM	STORM
T	TANGENT LENGTH
TC	TOP OF CURB
TEL	TEL-DATA
TP	TEST PIT
TS	TOP OF STEP
TW	TOP OF WALL
TYP	TYPICAL
UP	UTILITY POLE
W	WATER
WG	WATER GATE
WV	WATER VALVE
XFMR	TRANSFORMER

BASE PLAN NOTES

1. THE EXISTING CONDITIONS INFORMATION SHOWN ON THE DRAWINGS IS BASED ON THE FOLLOWING:
   - SURVEY DRAWINGS PROVIDED BY WSP USA INC. TITLED EXISTING CONDITIONS PLAN GRAFTON STATE HOSPITAL GRAFTON MA AND DATED JANUARY 20, 2021
   - WETLAND RESOURCE AREA BOUNDARIES DEPICTED ON THE DRAWINGS WITH FLAG NUMBER SERIES 2A-100 TO 2A-110, 2B-1 TO 2B-7, 2C-1 TO 2C-4 AND 2D-1 THROUGH 2D-20 WERE DELINEATED AND LOCATED USING A GPS UNIT WITH SUB METER ACCURACY BY TIGHE & BOND, INC. ON JANUARY 13, 2021.
   - WETLAND RESOURCE AREA BOUNDARIES DEPICTED ON THE DRAWINGS WITH FLAG NUMBER 2A-1 THROUGH 2A-17 WERE DELINEATED BY TIGHE & BOND, INC. ON NOVEMBER 23, 2020 AND LOCATED BY WSP USA INC. ON DATE OF THE SURVEY.
2. UTILITY LOCATIONS SHOWN WERE PLOTTED FROM INFORMATION SUPPLIED BY RESPECTIVE UTILITY COMPANIES AND DATA OBTAINED FROM FIELD SURVEYS AND AS BUILT DRAWINGS. THE ACCURACY AND COMPLETENESS OF SUBSURFACE INFORMATION SHOWN ON THESE DRAWINGS IS NOT GUARANTEED. DETERMINE THE LOCATIONS AND ELEVATIONS OF ALL UTILITIES WHICH MAY AFFECT CONSTRUCTION OPERATIONS.
3. SUB-SURFACE EXPLORATIONS WERE PERFORMED BY NEW ENGLAND BORING CONTRACTORS ON FEBRUARY 16 AND 17, 2020 AND JANUARY 26 THROUGH 28, 2021. BORING AND TEST PIT LOCATIONS SHOWN ON THE DRAWINGS ARE APPROXIMATE AND INFORMATION IS NOT GUARANTEED IN ANY WAY TO REPRESENT EXISTING CONDITIONS.
4. THE DRAWINGS ARE BASED ON THE FOLLOWING DATUMS: HORIZONTAL-NAD83; VERTICAL-NAVD88
5. THE EXISTING CONDITIONS SHOWN ARE APPROXIMATE. FIELD VERIFY EXISTING CONDITIONS.

GENERAL NOTES

1. NOTIFY DIGSAFE AT 1-888-344-7233 AND OTHER UTILITY OWNERS IN THE AREA NOT ON THE DIGSAFE LIST AT LEAST 72 HOURS PRIOR TO ANY DIGGING, TRENCHING, ROCK REMOVAL, DEMOLITION, BORING, BACKFILLING, GRADING, LANDSCAPING, OR ANY OTHER EARTH MOVING OPERATIONS.
2. LOCATIONS OF EXISTING UTILITIES ARE APPROXIMATE. IN ADDITION, SOME UTILITIES MAY NOT BE SHOWN. DETERMINE THE EXACT LOCATION OF UTILITIES BY TEST PIT OR OTHER METHODS, AS NECESSARY TO PREVENT DAMAGE TO UTILITIES AND/OR INTERRUPTIONS IN UTILITY SERVICE. PERFORM TEST PIT EXCAVATIONS AND OTHER INVESTIGATIONS TO LOCATE UTILITIES, AND PROVIDE THIS INFORMATION TO THE ENGINEER, PRIOR TO CONSTRUCTING THE PROPOSED IMPROVEMENTS. LOCATE ALL EXISTING UTILITIES TO BE CROSSED BY HAND EXCAVATION.
3. NOT ALL OF THE UTILITY SERVICES TO BUILDINGS ARE SHOWN. THE CONTRACTOR SHALL ANTICIPATE THAT EACH PROPERTY HAS SERVICE CONNECTIONS FOR THE VARIOUS UTILITIES.
4. PRIOR TO DEMOLISHING WORK INVOLVING ANY UTILITIES ,THE CONTRACTOR IS RESPONSIBLE FOR CONTACTING THE RESPECTIVE UTILITY COMPANY TO COORDINATE ANY REMOVAL OR RELOCATION OF EXISTING UTILITIES. THE DURATION OF ANY SHUTDOWN SHALL BE MINIMIZED AND TIMING SHALL BE COORDINATED WITH THE UTILITY COMPANY.
5. BOLD TEXT AND LINES INDICATE PROPOSED WORK. LIGHT TEXT AND LINES INDICATE APPROXIMATE EXISTING CONDITIONS.
6. TIGHE & BOND ASSUMES NO RESPONSIBILITY FOR ANY ISSUES, LEGAL OR OTHERWISE, RESULTING FROM CHANGES MADE TO THESE DRAWINGS WITHOUT WRITTEN AUTHORIZATION FROM TIGHE & BOND.
7. EXCAVATE ADDITIONAL TEST PITS TO LOCATE EXISTING UTILITIES AS DIRECTED OR APPROVED BY THE ENGINEER.
8. NOTIFY THE ENGINEER OF ANY UTILITIES IDENTIFIED DURING CONSTRUCTION THAT ARE NOT SHOWN ON THE DRAWINGS OR THAT DIFFER IN SIZE OR MATERIAL.
9. THE CONTRACTOR IS RESPONSIBLE FOR SITE SAFETY; COORDINATION WITH THE OWNER, ALL SUBCONTRACTORS, AND WITH OTHER CONTRACTORS WORKING WITHIN THE LIMITS OF WORK, THE MEANS AND METHODS OF CONSTRUCTING THE PROPOSED WORK.
10. OBTAIN, PAY FOR AND COMPLY WITH PERMITS, NOTICES AND FEES NECESSARY TO COMPLETE THE WORK. ARRANGE AND PAY FOR NECESSARY INSPECTIONS AND APPROVALS FROM THE JURISDICTIONAL AUTHORITIES.
11. SHORE UTILITY TRENCHES WHERE FIELD CONDITIONS DICTATE AND/OR WHERE REQUIRED BY LOCAL, STATE AND FEDERAL HEALTH AND SAFETY CODES.
12. FIELD VERIFY ALL EXISTING CONDITIONS PRIOR TO CONSTRUCTION. IF FIELD CONDITIONS ARE OBSERVED THAT VARY SIGNIFICANTLY FROM THOSE SHOWN ON THE DRAWINGS, IMMEDIATELY NOTIFY THE ENGINEER IN WRITING FOR RESOLUTION OF THE CONFLICTING INFORMATION.
13. PROTECT AND MAINTAIN ALL UTILITIES IN THE AREAS UNDER CONSTRUCTION DURING THE WORK. LEAVE ALL PIPES AND STRUCTURES WITHIN THE LIMITS OF THE CONTRACT IN A CLEAN AND OPERABLE CONDITION AT THE COMPLETION OF THE WORK. TAKE ALL NECESSARY PRECAUTIONS TO PREVENT SAND AND SILT FROM DISTURBED AREAS FROM ENTERING THE DRAINAGE SYSTEM.
14. THE CONTRACTOR IS RESPONSIBLE FOR SUPPORT OF EXISTING UTILITIES AND REPAIR OR REPLACEMENT COSTS OF UTILITIES DAMAGED DURING CONSTRUCTION, WHETHER ABOVE OR BELOW GRADE. REPLACE DAMAGED UTILITIES IMMEDIATELY AT NO ADDITIONAL COST TO THE OWNER AND AT NO COST TO THE PROPERTY OWNER.
15. TAKE NECESSARY MEASURES AND PROVIDE CONTINUOUS BARRIERS OF SUFFICIENT TYPE, SIZE, AND STRENGTH TO PREVENT ACCESS TO ALL WORK AND STAGING AREAS AT THE COMPLETION OF EACH DAYS WORK.
16. NO OPEN TRENCHES WILL BE ALLOWED OVER NIGHT. THE USE OF ROAD PLATES TO PROTECT THE EXCAVATION WILL BE CONSIDERED UPON REQUEST, BUT BACKFILLING IS PREFERRED.
17. THE CONTRACTOR IS RESPONSIBLE FOR ALL NECESSARY TRAFFIC CONTROL/SAFETY DEVICES TO ENSURE SAFE VEHICULAR AND PEDESTRIAN ACCESS THROUGH THE WORK AREA, OR FOR SAFELY IMPLEMENTING DETOURS AROUND THE WORK AREA. PERFORM TRAFFIC CONTROL IN ACCORDANCE WITH THE CONTRACTOR'S APPROVED TRAFFIC CONTROL PLAN.
18. MAINTAIN EMERGENCY ACCESS TO ALL PROPERTIES WITHIN THE PROKMT AREA AT ALL TIMES DURING CONSTRUCTION.
19. WHEN WORKING IN THE ROAD, PROVIDE THE OWNER AND LOCAL FIRE/POLICE/SCHOOL AUTHORITIES A DETAILED PLAN OF APPROACH INDICATING METHODS OF PROPOSED TRAFFIC ROUTING ON A DAILY BASIS. PROVIDE COORDINATION TO ENSURE COMMUNICATION AND COORDINATION BETWEEN THE OWNER, CONTRACTOR AND LOCAL FIRE/POLICE/SCHOOL AUTHORITIES THROUGHOUT THE CONSTRUCTION PERIOD.
20. THE TERM "DEMOLISH" USED ON THE DRAWINGS MEANS TO REMOVE AND DISPOSE OF IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL REQUIREMENTS.
21. REMOVE AND DISPOSE OF ALL CONSTRUCTION-RELATED WASTE MATERIALS AND DEBRIS IN STRICT ACCORDANCE WITH ALL APPLICABLE LOCAL, STATE, AND FEDERAL LAWS.
22. THE TERM "ABANDON" USED ON THE DRAWINGS MEANS TO LEAVE IN PLACE AND TAKE APPROPRIATE MEASURES TO DECOMMISSION AS SPECIFIED OR NOTED ON THE DRAWINGS.
23. ALL PROPOSED WORK MAY BE ADJUSTED IN THE FIELD BY THE OWNER'S PROKMT REPRESENTATIVE TO MEET EXISTING CONDITIONS.

Tighe&Bond

COMMONWEALTH OF MASSACHUSETTS FRANCIS J. HOEY III CIVIL No. 40111 REGISTERED PROFESSIONAL ENGINEER 02-26-21

COMMONWEALTH OF MASSACHUSETTS JEAN E. CHRISTY CIVIL No. 47080 REGISTERED PROFESSIONAL ENGINEER 2/26/21

PERMIT SET - NOT FOR CONSTRUCTION

Village at Grafton Woods

GSX-ODG, LLC

Grafton, Massachusetts

MARK	DATE	DESCRIPTION

PROJECT NO:	O0120013A-07
DATE:	JANUARY 2021
FILE:	240120-013A-C-Permit Drawings4.dwg
DRAWN BY:	SO / TJG
CHECKED BY:	KM
APPROVED BY:	FJH

STANDARD LEGEND, ABBREVIATIONS AND NOTES

SCALE: NO SCALE

G-002

Last Saved: 2/26/2021
Plotted On:Feb 26, 2021-2:20pm By: SOzturk
Tighe & Bond:J:\O\O0120 OConnell\013 Village at Grafton Woods\Drawings_Figures\AutoCAD\Sheet\Design Development\240120-013A-C-Permit Drawings4.dwg

EROSION CONTROL AND RESOURCE AREA PROTECTION NOTES

1. PROVIDE ALL EROSION CONTROL MEASURES SHOWN, SPECIFIED, REQUIRED BY PERMIT, AND/OR REQUIRED BY THE ENGINEER PRIOR TO ANY CONSTRUCTION OR IMMEDIATELY UPON REQUEST. MAINTAIN SUCH CONTROL MEASURES UNTIL FINAL SURFACE TREATMENTS ARE IN PLACE AND/OR UNTIL PERMANENT VEGETATION IS ESTABLISHED. INSPECT AFTER EACH RAINSTORM AND DURING MAJOR STORM EVENTS TO CONFIRM THAT ALL SEDIMENTATION AND EROSION CONTROL MEASURES REQUIRED ARE IN PLACE AND EFFECTIVE.
2. PRIOR TO STARTING WORK, CLEARLY STAKE WORK LIMITS. DO NOT DISTURB VEGETATION AND TOPSOIL BEYOND THE PROPOSED LIMITS. COORDINATE WITH THE ENGINEER FOR LOCATIONS OF TEMPORARY STOCKPILING OF TOPSOIL DURING CONSTRUCTION.
3. INSTALL SILT SACKS OR OTHER APPROVED SEDIMENTATION BARRIERS IN/AT ALL CATCH BASINS IN THE PROKMT AREA.
4. COMPACT, STABILIZE, AND LOAM AND SEED SIDE SLOPES, SHOULDER AREAS AND DISTURBED VEGETATED AREAS IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND AS REQUIRED BY PERMITS. GRADE SIDE SLOPES, SHOULDER AREAS AND DISTURBED VEGETATED AREAS TO A MAXIMUM SLOPE OF 3 HORIZONTAL TO 1 VERTICAL (3H:1V), WHERE POSSIBLE. PROVIDE BIODEGRADABLE EROSION CONTROL BLANKETS TO PREVENT EROSION WHERE SLOPES ARE STEEPER THAN 3H:1V.
5. SETTLE OR FILTER ALL SILT-LADEN WATER FROM DEWATERING ACTIVITIES IN A SEDIMENTATION OR FILTER BAG TO REMOVE SEDIMENTS PRIOR TO RELEASE USING A SEDIMENTATION OR FILTER BAG LOCATED DOWN-GRADIENT OF THE DEWATERED AREA.
6. REMOVE AND PROPERLY DISPOSE OF SILT TRAPPED AT BARRIERS IN UPLAND AREAS OUTSIDE BUFFER ZONES. REMOVE MATERIALS DEPOSITED IN ANY TEMPORARY SETTLING BASINS AT THE COMPLETION OF THE PROKMT. RESTORE ALL DISTURBED AREAS TO THEIR PRECONSTRUCTION CONDITION.
7. SWEEP, COLLECT, REMOVE AND DISPOSE OF ANY SEDIMENT TRACKED ONTO PUBLIC RIGHT-OF-WAYS AT THE END OF EACH DAY.
8. LOAM AND SEED ALL DISTURBED VEGETATED AREAS TO ESTABLISH COVER AND STABILIZATION AS SOON AS POSSIBLE FOLLOWING DISTURBANCE.
9. MAINTAIN AN ADDITIONAL SUPPLY OF EROSION CONTROL MEASURES ON-SITE FOR EMERGENCY REPAIRS.
10. STORE FUEL, OIL, PAINT, OR OTHER HAZARDOUS MATERIALS IN A SECONDARY CONTAINER AND REMOVE TO A SECURE LOCKED AND COVERED AREA DURING NON-WORK HOURS.
11. PROVIDE A SUPPLY OF ABSORBENT SPILL RESPONSE MATERIALS SUCH AS BOOMS, BLANKETS, AND OIL ABSORBENT MATERIALS AT THE CONSTRUCTION SITE AT ALL TIMES TO CLEAN UP POTENTIAL SPILLS OF HAZARDOUS MATERIALS. IMMEDIATELY REPORT SPILLS OF HAZARDOUS MATERIALS TO THE STATE ENVIRONMENTAL AGENCY AND THE MUNICIPALITY WHERE THE WORK IS OCCURRING.

SURFACE RESTORATION NOTES

1. ALL PAVEMENT DAMAGED BY THE CONTRACTOR'S OPERATIONS SHALL BE REPLACED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
2. PROVIDE SITE GRADING AT HANDICAPPED RAMPS, SIDEWALKS, AND BUILDING ENTRANCES THAT IS CONSISTENT WITH THE RELEVANT ACCESS REQUIREMENTS OF THE ARCHITECTURAL BARRIERS ACT (ABA), THE AMERICANS WITH DISABILITIES ACT (ADA), AND MA ARCHITECTURAL ACCESS BOARD REQUIREMENTS (AAB). SMALL CHANGES IN GRADE OVER RELATIVELY SHORT DISTANCES (E.G. AT PARKING SPACES, ACCESSIBLE ROUTES, AND RAMPS) MIGHT NOT BE CLEARLY DEPICTED WITHIN THE CONTOUR INTERVAL SHOWN. COMPLY WITH THE CRITERIA IN THESE STANDARDS. SELECT MAXIMUM SLOPE CRITERIA ARE REPRODUCED BELOW:
   - ACCESSIBLE PARKING STALL AND PASSENGER LOADING ZONE (ANY DIRECTION) SLOPE < 2.0%
   - LONGITUDINAL SLOPE ALONG ACCESSIBLE ROUTE < 5.0%
   - CROSS SLOPE ALONG ACCESSIBLE ROUTES < 2.0%
3. PROTECT FEATURES (E.G., WALLS, FENCES, MAIL BOXES, SIGNS, SIDEWALKS, CURBING, STAIRS, WALKWAYS, TREES, ETC.) FROM DAMAGE DURING CONSTRUCTION, INCLUDING PROVIDING TEMPORARY SUPPORTS, WHEN APPROPRIATE.
4. IF REMOVAL OF PROJECT FEATURES IS REQUIRED IN ORDER TO PERFORM THE PROPOSED WORK, REMOVE THOSE SITE FEATURES ONLY UPON APPROVAL OF ENGINEER. REPLACE ALL REMOVED PROJECT FEATURES; NEW ITEMS SHALL BE EQUAL OR BETTER IN QUALITY AND CONDITION TO THE ITEMS REMOVED.
5. EXISTING SURVEY MONUMENTS DISTURBED BY THE CONTRACTOR SHALL BE REPLACED BY A LAND SURVEYOR LICENSED IN THE STATE IN WHICH THE WORK IS PERFORMED AT NO ADDITIONAL COST TO THE OWNER.
6. COORDINATE THE ADJUSTMENT OF EXISTING UTILITY STRUCTURES WITH EACH RESPONSIBLE UTILITY OWNER PRIOR TO RECONSTRUCTION AND/OR PAVING OPERATIONS. RAISE ALL STRUCTURES TO FINISHED GRADES PRIOR TO THE END OF THE CONSTRUCTION SEASON AND PRIOR TO FINISHED PAVING.
7. REPAIR DISTURBED PAVED SURFACES AT THE END OF EACH WORK WEEK, UNLESS OTHERWISE APPROVED/REQUIRED BY THE OWNER.
8. PLACE TEMPORARY BITUMINOUS CONCRETE PAVEMENT AT DISTURBED PORTLAND CEMENT CONCRETE SIDEWALKS AND DRIVEWAYS AT THE END OF EACH WORK WEEK, UNLESS OTHERWISE APPROVED/REQUIRED BY THE OWNER.
9. TRANSFER ALL TEMPORARY BENCHMARKS, AS NECESSARY.
10. ACCOMMODATE PEDESTRIAN TRAFFIC WHERE A SIDEWALK IS TO BE CLOSED FOR SAFETY. "SIDEWALK CLOSED HERE" SIGNS SHALL BE USED AT THE NEAREST SAFE INTERSECTION. SEE TRAFFIC CONTROL DETAILS FOR SIGN INFORMATION.
11. RESTORE ALL AREAS DISTURBED BY THE CONTRACTOR BEYOND THE PAYLINE LIMITS TO ORIGINAL CONDITIONS AT NO ADDITIONAL COST TO THE OWNER.
12. REGRADE ALL UNPAVED AREAS DISTURBED BY THE WORK AS REQUIRED. REPAIR/REPLACE PAVED SURFACES DISTURBED BY THE WORK IN-KIND, UNLESS OTHERWISE NOTED. RESTORE SURFACES TO EXISTING OR PROPOSED CONDITIONS AS INDICATED ON THE DRAWINGS.
13. PROVIDE A SMOOTH, FLUSH TRANSITION BETWEEN ALL NEW AND EXISTING PAVEMENTS AND WALKING SURFACES.

BASIS OF DESIGN NOTES

1. THE PROPERTY AT 8 PINE STREET IN NORTH GRAFTON, MASSACHUSETTS (WORCESTER COUNTY) IS THE SITE OF THE FORMER GRAFTON STATE HOSPITAL. THE PROPERTY HAS BEEN VACANT SINCE 1997.
2. THE PROPERTY IS ZONED RESIDENTIAL (R-40) AND IS LOCATED WITHIN THE NORTH GRAFTON TRANSIT VILLAGE OVERLAY DISTRICT (NGTVOD).
3. EXISTING BUILDINGS WILL BE DEMOLISHED IN ACCORDANCE WITH MASSACHUSETTS HISTORICAL COMMISSION REQUIREMENTS FOR DOCUMENTING HISTORICAL RESOURCES.
4. THE PROPOSED LAND USE IS A MIXED USE TRANSIT-ORIENTED DEVELOPMENT COMBINING RESIDENTIAL AND RETAIL/COMMERCIAL USES WITH ACCESS TO THE MASSACHUSETTS BAY TRANSIT AUTHORITY (MBTA) GRAFTON STATION.
5. ACCESS ROAD AND DRIVEWAY HORIZONTAL AND VERTICAL GEOMETRY HAS BEEN DESIGNED IN ACCORDANCE WITH THE TOWN OF GRAFTON SUBDIVISION REGULATIONS TO THE MAXIMUM EXTENT PRACTICABLE.
6. DESIGN SPEED WITHIN THE PROPOSED ACCESS ROAD/DRIVEWAY IS 20 MILES PER HOUR.
7. UTILITY SERVICES WILL BE COORDINATED AND PROVIDED BY THE FOLLOWING ENTITIES:
   - SANITARY SEWER - GRAFTON SEWER DEPARTMENT
   - WATER SERVICE - GRAFTON WATER DISTRICT
   - STORM DRAINAGE - GRAFTON HIGHWAY DEPARTMENT
   - ELECTRIC - NATIONAL GRID
   - NATURAL GAS - EVERSOURCE GAS
   - TELEPHONE/COMMUNICATION - VERIZON
7. UTILITY DESIGN LOADS ACCORDING TO SAGE ENGINEERING ASSOCIATES AS OF FEBRUARY 24, 2021 ARE AS FOLLOWS:
   - SANITARY SEWER (RESIDENTIAL) - 4,665 FIXTURES WITH A TOTAL FLOW OF 2,350 GALLONS PER MINUTE
   - SANITARY SEWER (RETAIL) - TO BE DETERMINED
   - DOMESTIC WATER SERVICE (RESIDENTIAL) - 465 FIXTURES WITH A TOTAL FLOW OF 475 GALLONS PER MINUTE
   - DOMESTIC WATER SERVICE (RETAIL) - TO BE DETERMINED
   - FIRE PROTECTION WATER SERVICE (RESIDENTIAL) - 1,250 GPM AT 40 PSI
   - FIRE PROTECTION WATER SERVICE (RETAIL) - TO BE DETERMINED
   - ELECTRIC -3,000 AMP 120 / 208 VOLT SERVICE
   - NATURAL GAS - TO BE DETERMINED

ZONING TABLE

ZONING DISTRICT: RESIDENTIAL R-40
NORTH GRAFTON TRANSIT VILLAGE OVERLAY DISTRICT (NGTVOD)

DIMENSIONAL REQUIREMENTS:	REQUIRED	PROVIDED
SETBACKS: FRONT YARD	50'	50' RESIDENTIAL 30' RETAIL
SIDE YARD	15'	30'
REAR YARD	20'	29'
MIN LOT AREA	60,000 SF^2	417,861 SF^2 (9.57 ACRES)
MAX BUILDING HEIGHT	5 STORIES / 75'	4 STORIES / 60'
MAX BUILDING COVERAGE	50%	37%[1]
MIN OPEN SPACE	10%	43%[2]

[1] BUILDING COVERAGE INCLUDES PARKING GARAGES.
[2] OPEN SPACE CALCULATIONS EXCLUDE WETLAND AREAS.

PARKING CALCULATION TABLE (UPDATE)

PARKING REQUIREMENTS:

RESIDENTIAL USE
1.5 SPACES PER APARTMENT
316 APARTMENTS X 1.5 SPACES = 474 SPACES

RETAIL USE
1 SPACE PER 300 SF OF NONRESIDENTIAL SPACE
23,288 SF / 300 SF = 78 SPACES

TOTAL REQUIRED= 552 SPACES REQUIRED

PROVIDED:
ON-SITE PARKING SPACES = TBD SPACES
TOTAL PROVIDED (INCL. ACCESSIBLE SPACES) = TBD SPACES PROVIDED

ACCESSIBLE PARKING
2% OF SPACES MORE THAN 500 BUT NOT MORE THAN 1000, NOT FEWER THAN SIX
552 SPACES x 2% = 11 SPACES REQUIRED
MIN. 11 SPACES PROVIDED

NOTE:
1. PARKING GARAGE IS UNDER DEVELOPMENT, BUT PARKING WILL BE PROVIDED IN ACCORDANCE WITH SECTION 13.11 OF THE ZONING BY-LAW OF TOWN OF GRAFTON.

Tighe&Bond

COMMONWEALTH OF MASSACHUSETTS FRANCIS J. HOEY III CIVIL No. 40111 REGISTERED PROFESSIONAL ENGINEER 02-26-21

COMMONWEALTH OF MASSACHUSETTS JEAN E. CHRISTY CIVIL No. 47080 REGISTERED PROFESSIONAL ENGINEER 2/24/21

PERMIT SET - NOT FOR CONSTRUCTION

Village at Grafton Woods

GSX-ODG, LLC

Grafton, Massachusetts

MARK	DATE	DESCRIPTION

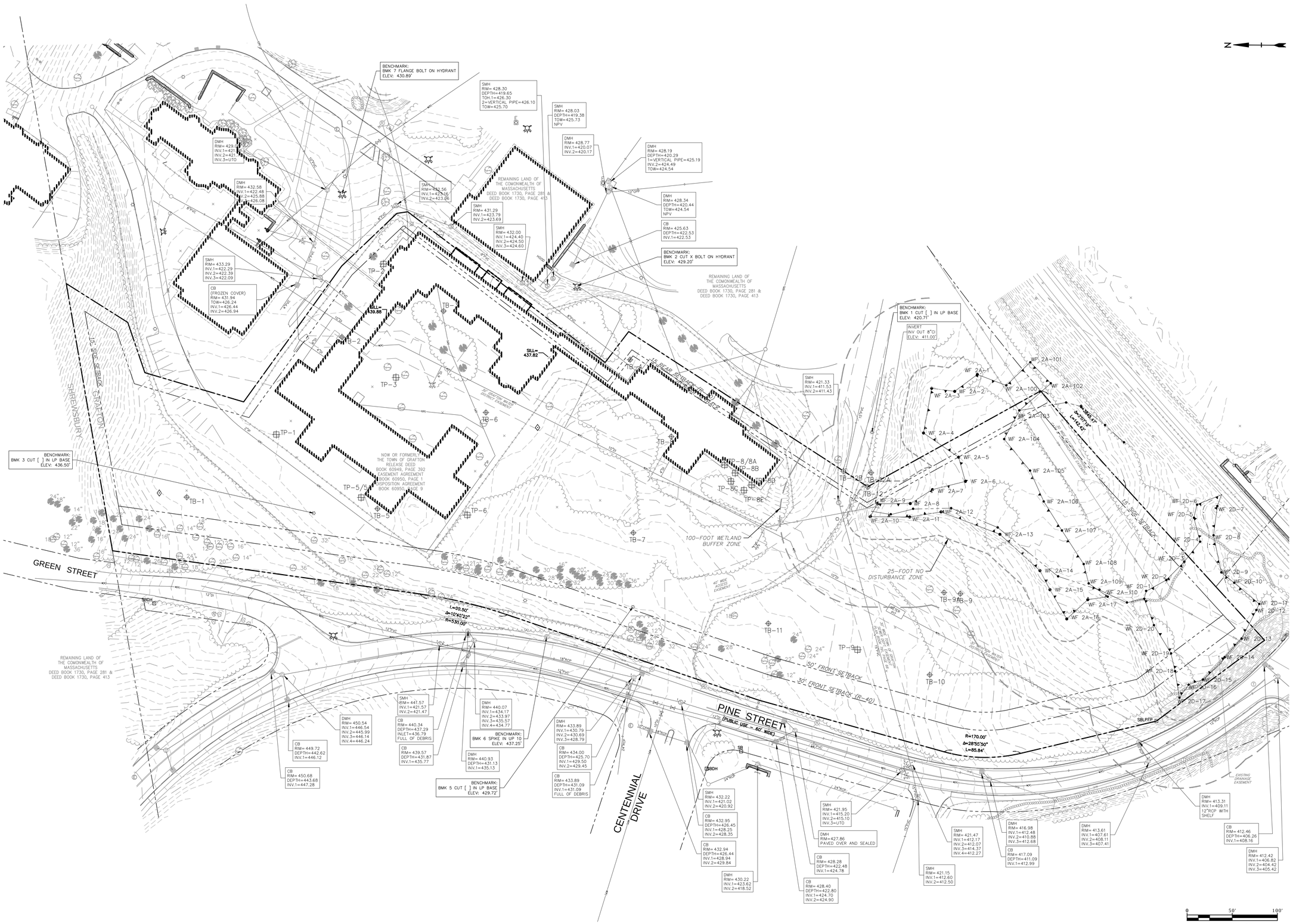
PROJECT NO:	O0120013A-07
DATE:	JANUARY 2021
FILE:	240120-013A-C-Permit Drawings4.dwg
DRAWN BY:	SO / TJG
CHECKED BY:	KM
APPROVED BY:	FJH

STANDARD NOTES

SCALE: NO SCALE

G-003

Last Saved: 2/26/2021
Plotted On:Feb 26, 2021-2:20pm By: SOzturk
Tighe & Bond:J:\O\O0120 OConnell\013 Village at Grafton Woods\Drawings_Figures\AutoCAD\Sheet\Design Development\240120-013A-C-Permit Drawings4.dwg



Tighe&Bond

PERMIT SET -
NOT FOR
CONSTRUCTION

Village at
Grafton
Woods

GSX-ODG, LLC

Grafton,
Massachusetts

MARK	DATE	DESCRIPTION

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DRAWN BY:	SO / TJG
CHECKED BY:	KM
APPROVED BY:	FJH

OVERALL EXISTING
CONDITIONS SITE PLAN

SCALE: 1" = 50'

C-100

Last Saved: 2/26/2021
Plotted On:Feb 26, 2021-2:20pm By: SOzturk
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Tighe&Bond

PERMIT SET - NOT FOR CONSTRUCTION

Village at Grafton Woods

GSX-ODG, LLC

Grafton, Massachusetts

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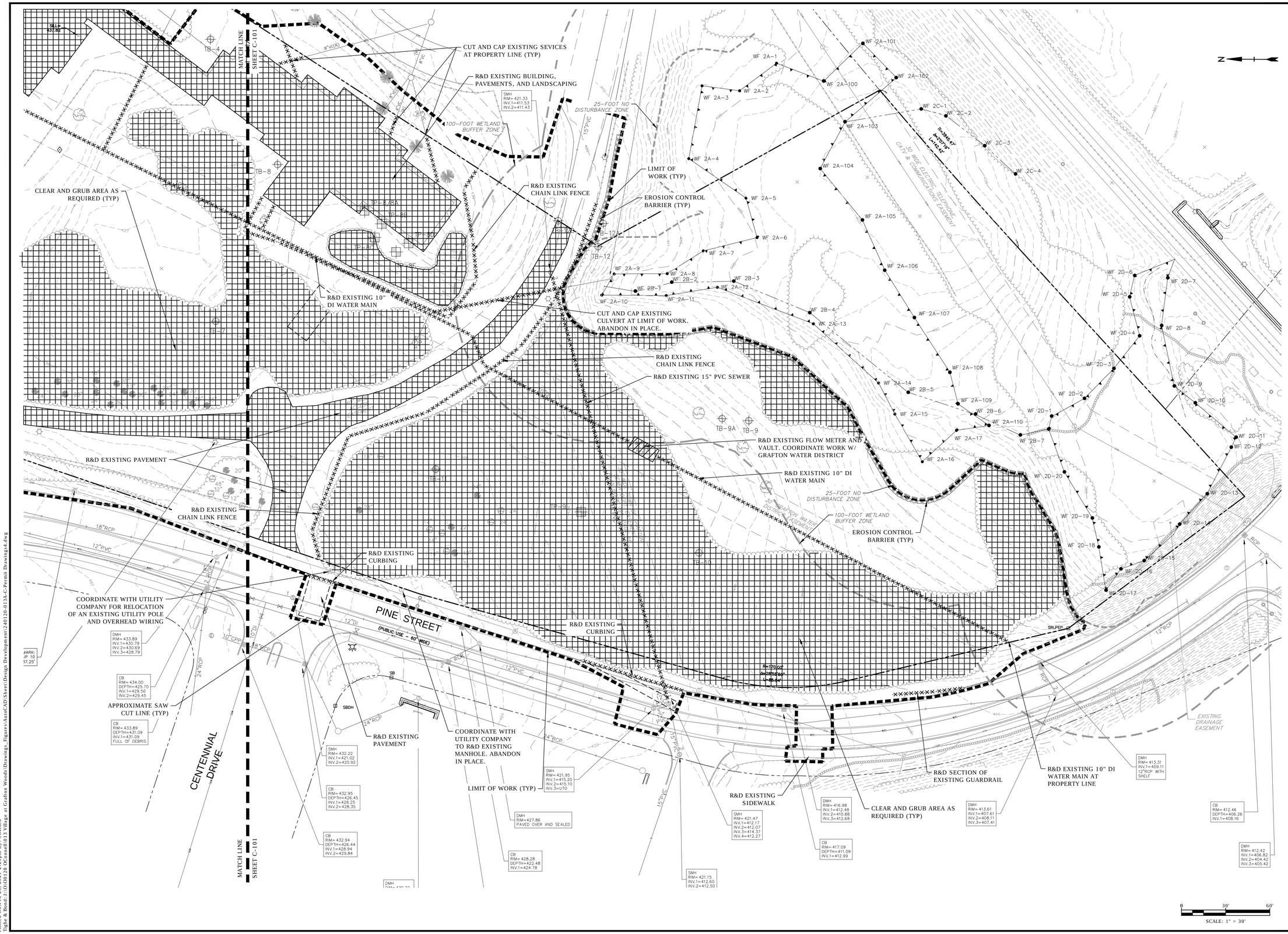
DRAWN BY:	SO / TJG
CHECKED BY:	KM
APPROVED BY:	FJH/KM

EXISTING CONDITIONS AND SITE DEMOLITION PLAN - 1

SCALE: 1" = 30'

C-101

Last Saved: 2/26/2021
Plotted On:Feb 26, 2021-2:20pm By: SOzurek
Tighe & Bond:J:\O\O0120 OConnell\013 Village at Grafton Woods\Drawings_Figures\AutoCAD\Sheet\Design Development\240120-013A-C-Permit Drawings4.dwg



Tighe&Bond

PERMIT SET - NOT FOR CONSTRUCTION

Village at Grafton Woods

GSX-ODG, LLC

Grafton, Massachusetts

MARK	DATE	DESCRIPTION

PROJECT NO:	O0120013A-07
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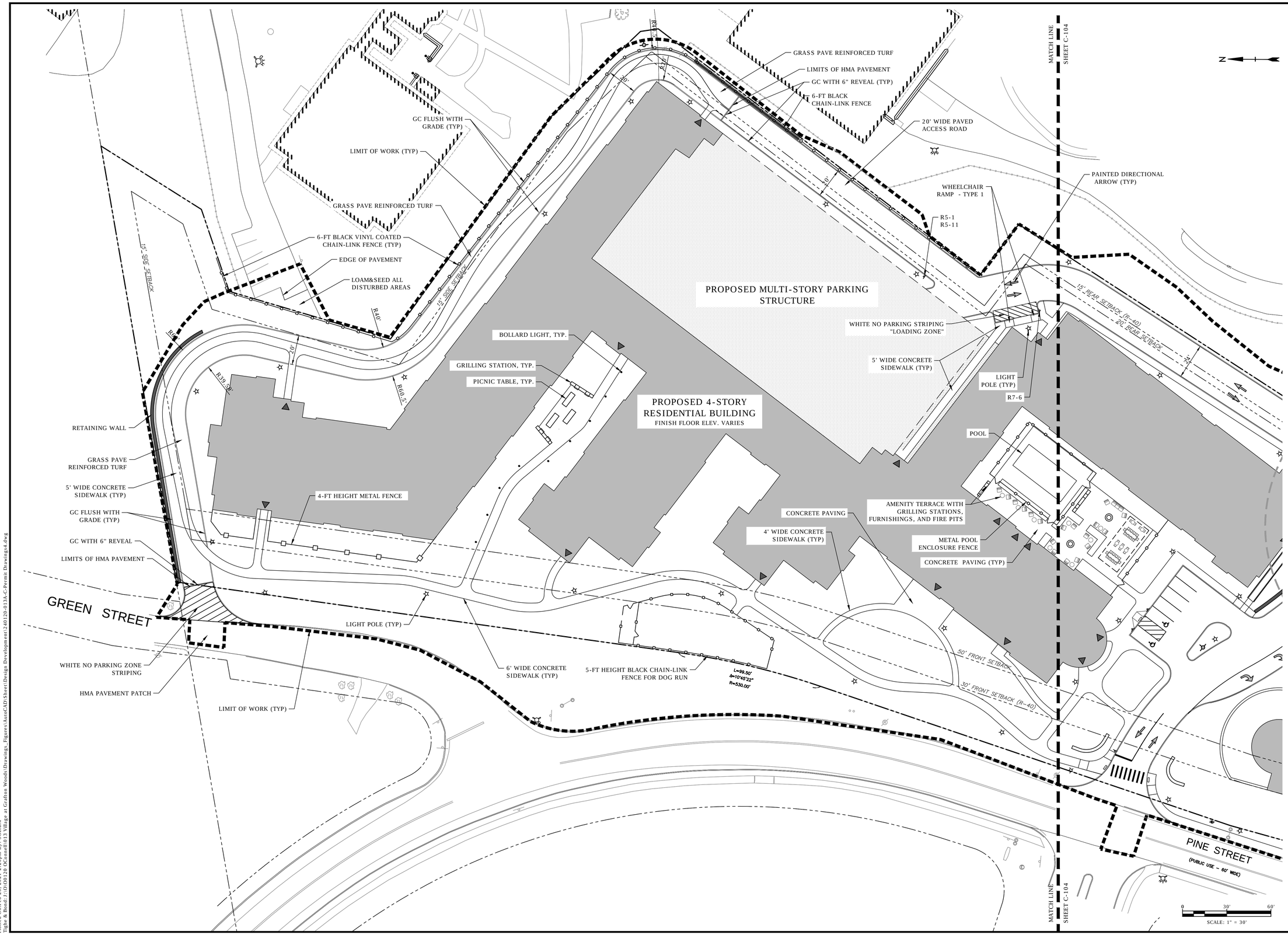
DRAWN BY:	SO / TJG
CHECKED BY:	KM
APPROVED BY:	FJH

EXISTING CONDITIONS AND SITE DEMOLITION PLAN - 2

SCALE: 1" = 30'

C-102

Last Saved: 2/26/2021
Plotted On:Feb 26, 2021-2:20pm By: SOzturk
Tighe & Bond:J:\O\O0120 OConnell\013 Village at Grafton Woods\Drawings_Figures\AutoCAD\Sheet\Design Development\240120-013A-C-Permit Drawings4.dwg



Tighe&Bond

PERMIT SET - NOT FOR CONSTRUCTION

Village at Grafton Woods

GSX-ODG, LLC

Grafton, Massachusetts

MARK	DATE	DESCRIPTION

PROJECT NO:	O0120013A-07
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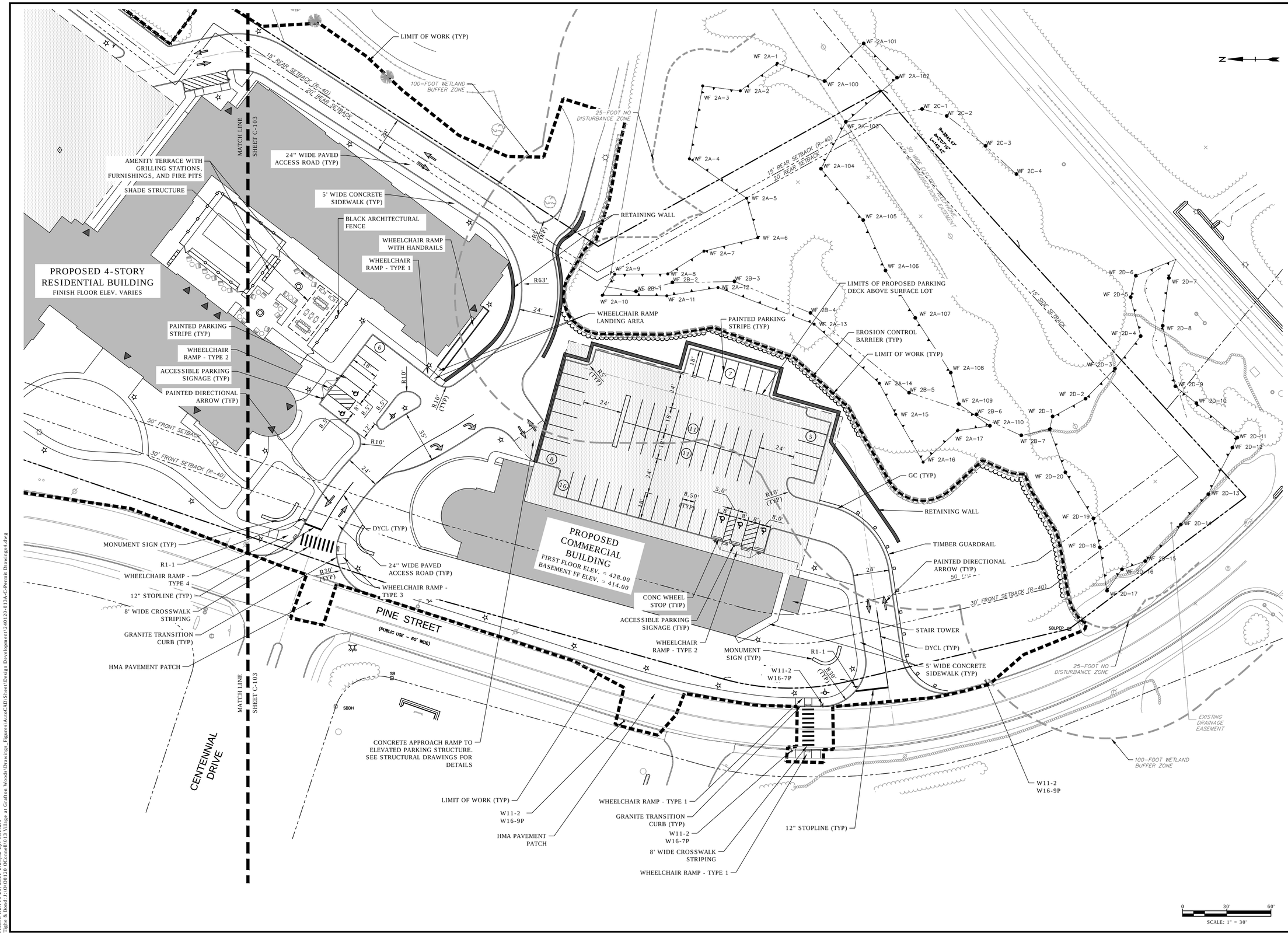
DRAWN BY:	SO / TJG
CHECKED BY:	KM
APPROVED BY:	FJH

SITE LAYOUT AND MATERIALS PLAN - 1

SCALE: 1" = 30'

C-103

Last Saved: 2/26/2021
Plotted On:Feb 26, 2021-2:20pm By: SOzturk
Tighe & Bond:J:\O\O0120 OConnell\013 Village at Grafton Woods\Drawings_Figures\AutoCAD\Sheet\Design Development\240120-013A-C-Permit Drawings4.dwg



Tighe&Bond

PERMIT SET - NOT FOR CONSTRUCTION

Village at Grafton Woods

GSX-ODG, LLC

Grafton, Massachusetts

MARK	DATE	DESCRIPTION

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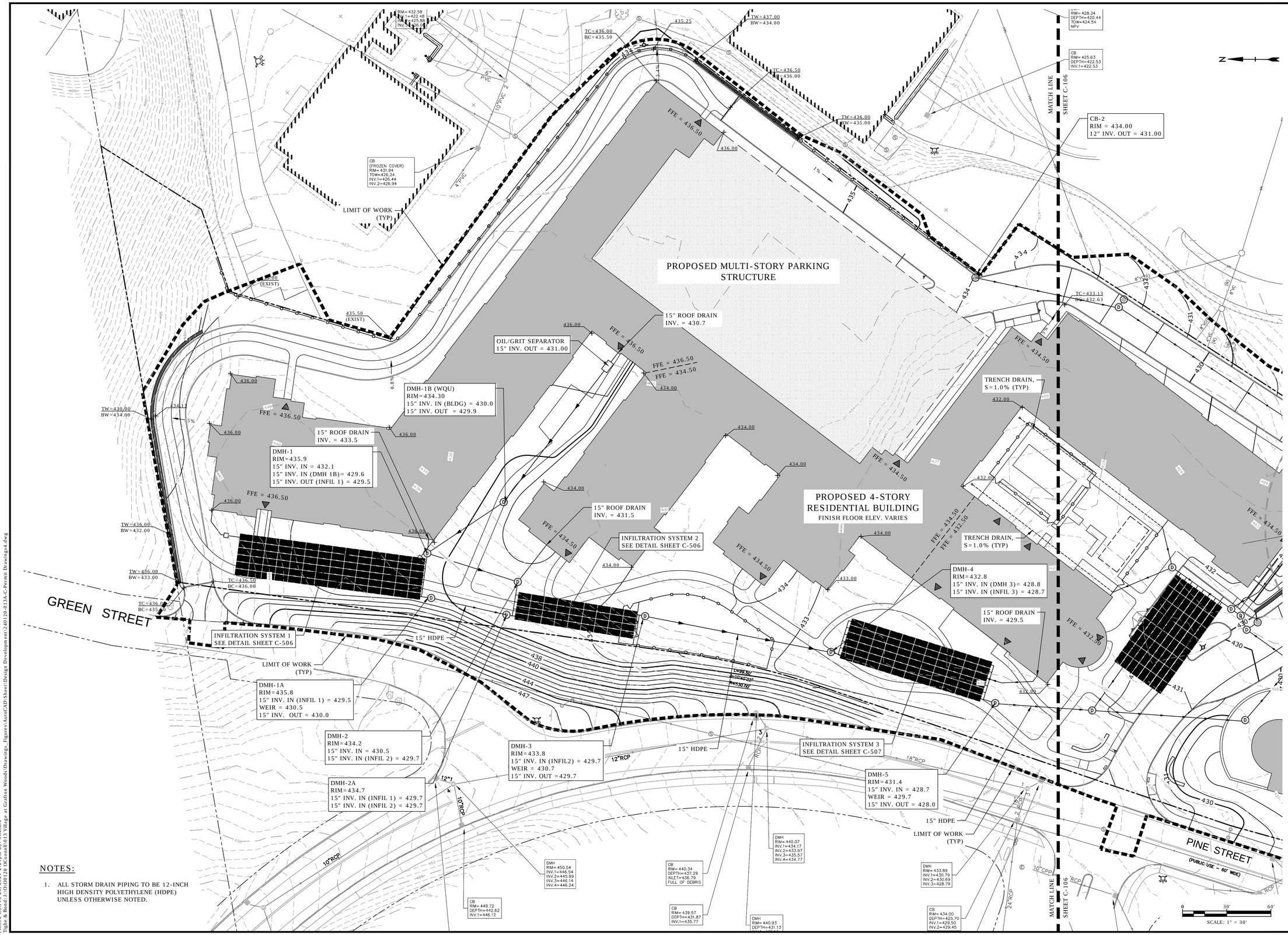
DRAWN BY:	SO / TJG
CHECKED BY:	KM
APPROVED BY:	FJH

SITE LAYOUT AND MATERIALS PLAN - 2

SCALE: 1" = 30'

C-104

Last Saved: 2/26/2021
Plotted On:Feb 26, 2021-2:20pm By: SOzturk
Tighe & Bond:J:\O\O0120 OConnell\013 Village at Grafton Woods\Drawings_Figures\AutoCAD\Sheet\Design Development\240120-013A-C-Permit Drawings4.dwg



NOTES:

1. ALL STORM DRAIN PIPING TO BE 12-INCH HIGH DENSITY POLYETHYLENE (HDPE) UNLESS OTHERWISE NOTED.

Last Saved: 2/26/2021
Plotted On:Feb 26, 2021-2:21pm By: SOzurk
Tighe & Bond:J:\O\O0120 OConnell\013 Village at Grafton Woods\Drawings_Figures\AutoCAD\Sheet\Design Development\240120-013A-C-Permit Drawings4.dwg

Tighe&Bond

COMMONWEALTH OF MASSACHUSETTS
FRANCIS J. HOEY III
CIVIL
No. 40111
REGISTERED PROFESSIONAL ENGINEER
02-26-21

COMMONWEALTH OF MASSACHUSETTS
JEAN E. CHRISTY
CIVIL
No. 47080
REGISTERED PROFESSIONAL ENGINEER
2/26/21

PERMIT SET - NOT FOR CONSTRUCTION

Village at Grafton Woods

GSX-ODG, LLC

Grafton, Massachusetts

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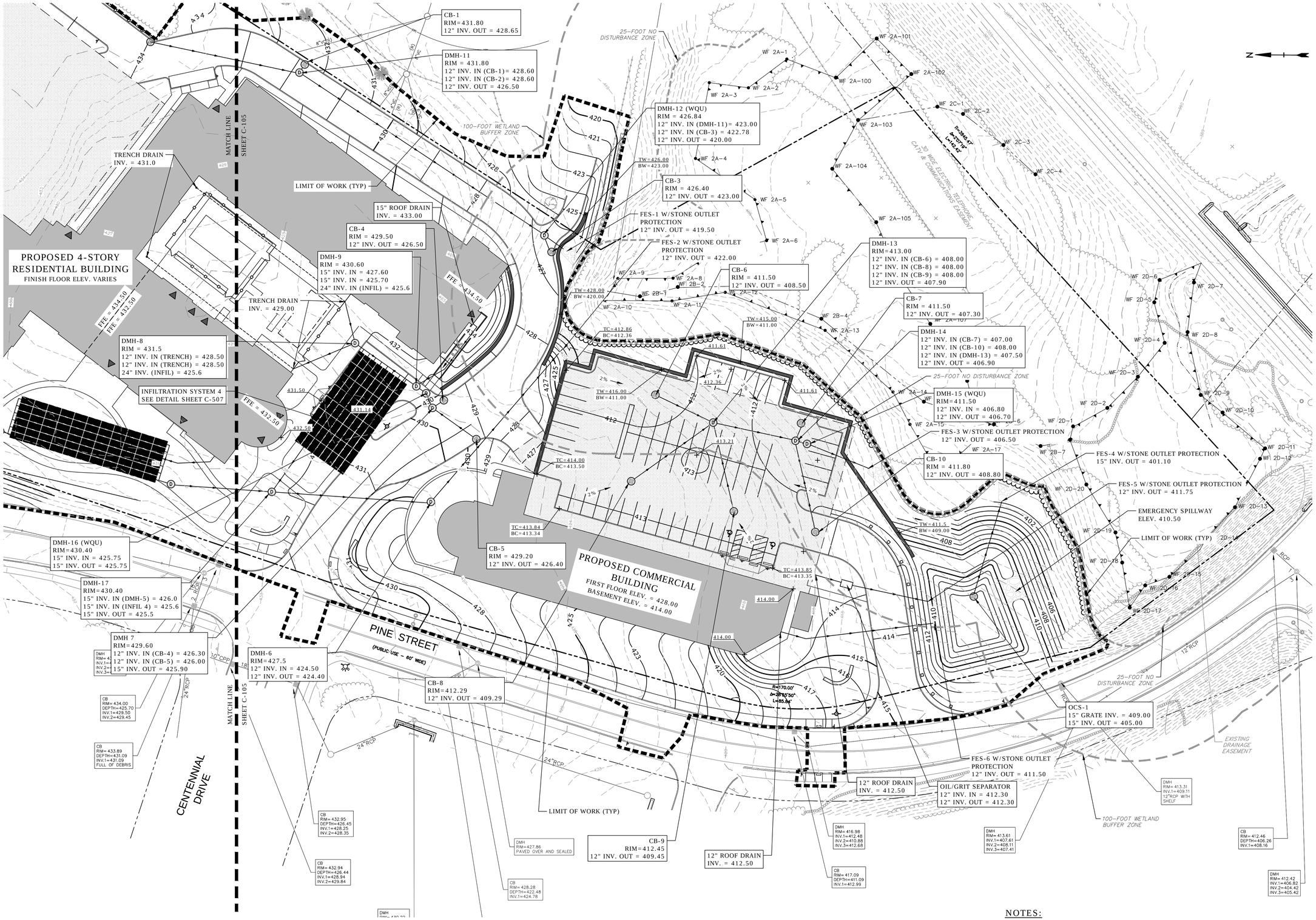
DRAWN BY:	SO / TJG
CHECKED BY:	KM
APPROVED BY:	FJH

GRADING, DRAINAGE AND EROSION CONTROL PLAN - 1

SCALE: 1" = 30'

C-105



NOTES:

1. ALL STORM DRAIN PIPING TO BE 12-INCH HIGH DENSITY POLYETHYLENE (HDPE) UNLESS OTHERWISE NOTED.

Tighe&Bond

PERMIT SET - NOT FOR CONSTRUCTION

Village at Grafton Woods

GSX-ODG, LLC

Grafton, Massachusetts

MARK	DATE	DESCRIPTION

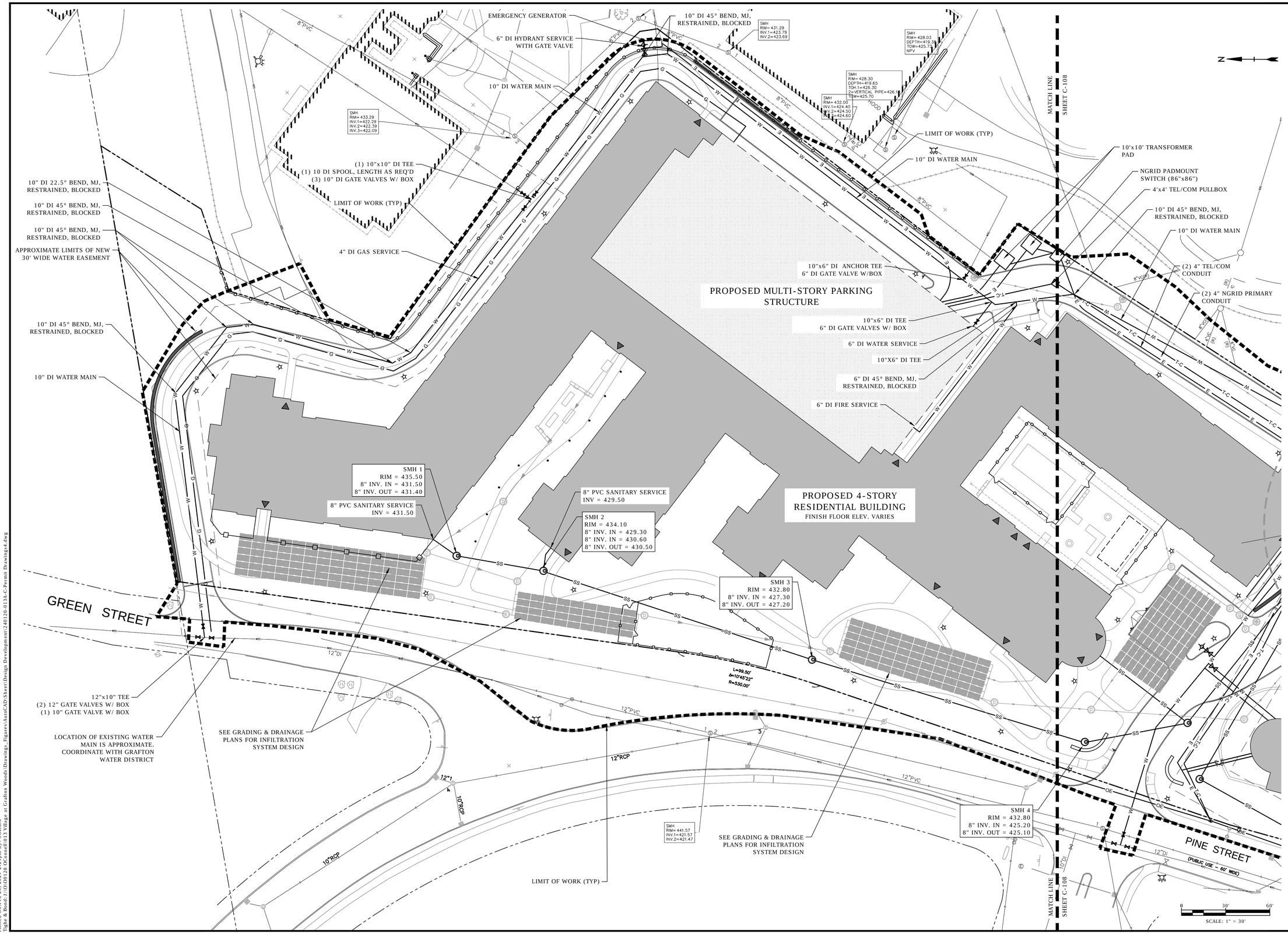
PROJECT NO:	O0120013A-07
DATE:	JANUARY 2021
FILE:	240120-013A-C-Permit Drawings4.dwg
DRAWN BY:	SO / TJG
CHECKED BY:	KM
APPROVED BY:	FJH

GRADING, DRAINAGE AND EROSION CONTROL PLAN - 2

SCALE: 1" = 30'

C-106

Last Saved: 2/26/2021
Plotted On:Feb 26, 2021-2:21pm By: SOzturk
Tighe & Bond:J:\O\O0120 OConnell\013 Village at Grafton Woods\Drawings_Figures\AutoCAD\Sheet\Design Development\240120-013A-C-Permit Drawings4.dwg



Tighe&Bond

PERMIT SET - NOT FOR CONSTRUCTION

Village at Grafton Woods

GSX-ODG, LLC

Grafton, Massachusetts

MARK	DATE	DESCRIPTION

PROJECT NO:	O0120013A-07
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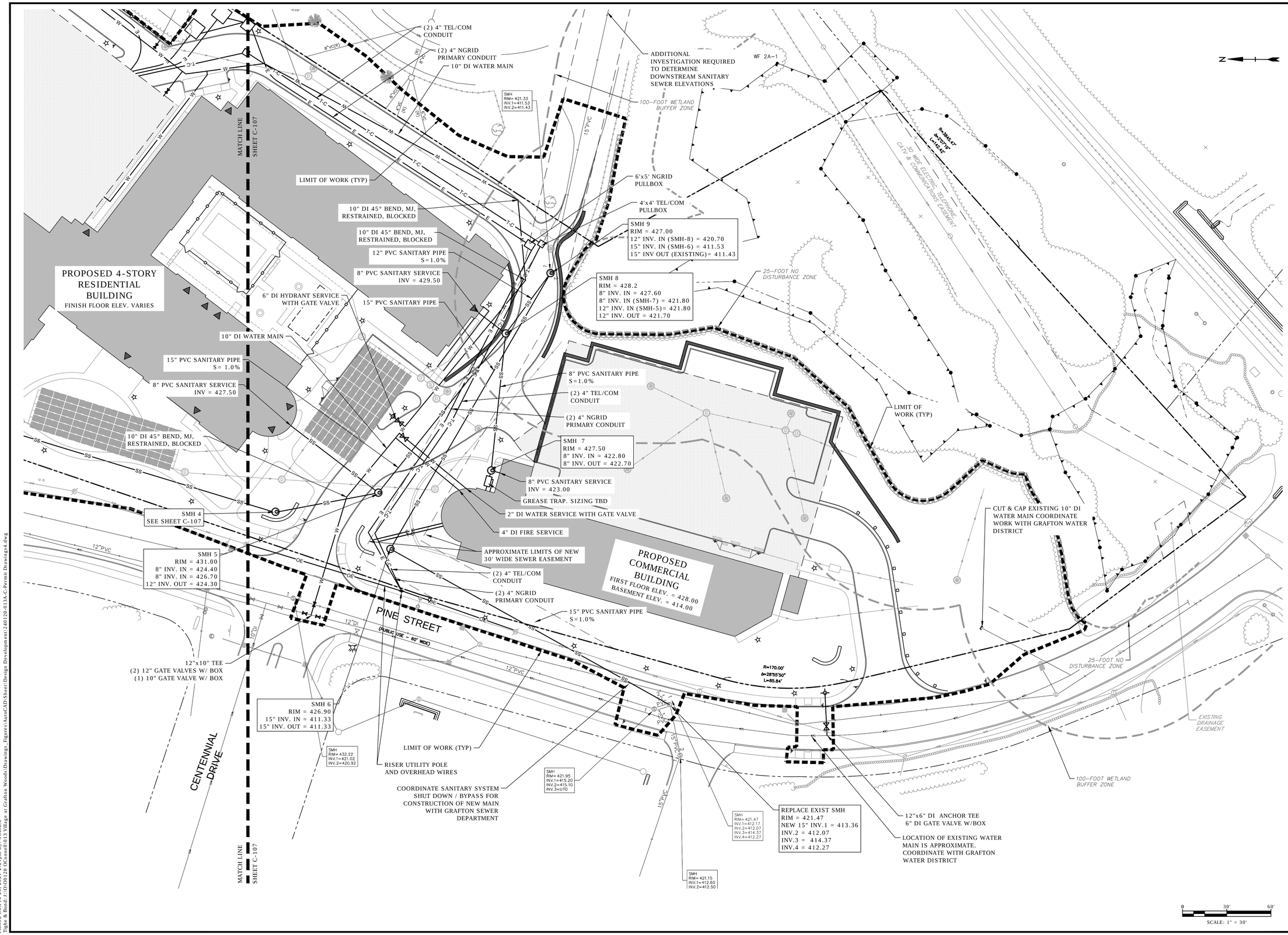
DRAWN BY:	SO / TJG
CHECKED BY:	KM
APPROVED BY:	FJH

UTILITIES SITE PLAN - 1

SCALE: 1" = 30'

C-107

Last Saved: 2/26/2021
Plotted On:Feb 26, 2021-2:21pm By: SOzturk
Tighe & Bond:J:\O\O0120 OConnell\013 Village at Grafton Woods\Drawings_Figures\AutoCAD\Sheet\Design Development\240120-013A-C-Permit Drawings4.dwg



Tighe&Bond

PERMIT SET - NOT FOR CONSTRUCTION

Village at Grafton Woods

GSX-ODG, LLC

Grafton, Massachusetts

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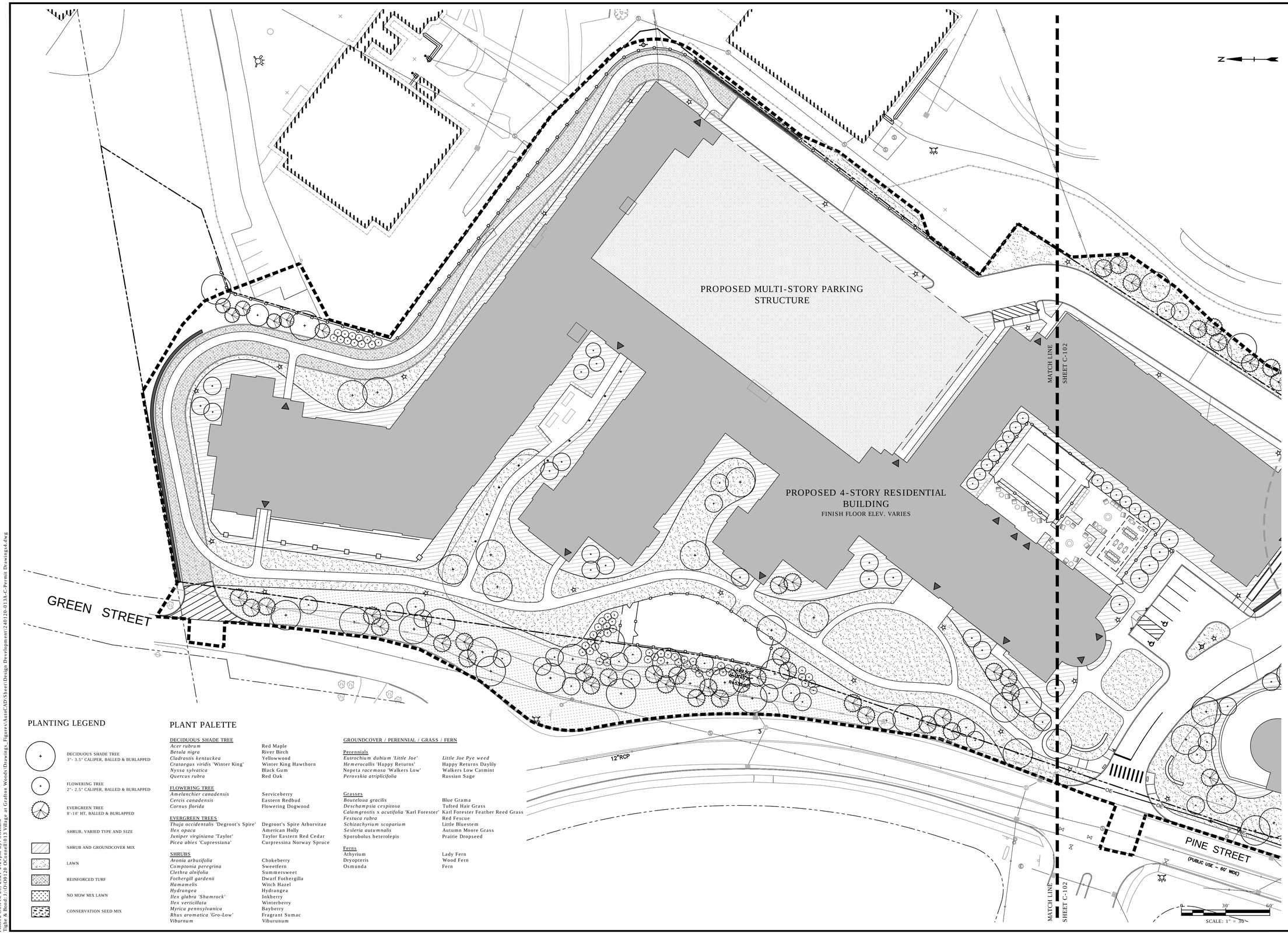
DRAWN BY:	SO / TJG
CHECKED BY:	KM
APPROVED BY:	FJH

UTILITIES SITE PLAN - 2

SCALE: 1" = 30'

C-108

Last Saved: 2/26/2021
Plotted On:Feb 26, 2021-2:21pm By: SOzurek
Tighe & Bond:J:\O\O0120 OConnell\013 Village at Grafton Woods\Drawings, Figures\AutoCAD\Sheet\Design Development\240120-013A-C-Permit Drawings4.dwg



PLANTING LEGEND

- DECIDUOUS SHADE TREE — 3"- 3.5" CALIPER, BALLED & BURLAPPED
- FLOWERING TREE — 2"- 2.5" CALIPER, BALLED & BURLAPPED
- EVERGREEN TREE — 8'-10' HT, BALLED & BURLAPPED
- SHRUB, VARIED TYPE AND SIZE
- SHRUB AND GROUNDCOVER MIX
- LAWN
- REINFORCED TURF
- NO MOW MIX LAWN
- CONSERVATION SEED MIX

PLANT PALETTE

DECIDUOUS SHADE TREE	
Acer rubrum	Red Maple
Betula nigra	River Birch
Cladrastis kentuckea	Yellowwood
Crataegus viridis 'Winter King'	Winter King Hawthorn
Nyssa sylvatica	Black Gum
Quercus rubra	Red Oak
FLOWERING TREE	
Amelanchier canadensis	Serviceberry
Cercis canadensis	Eastern Redbud
Cornus florida	Flowering Dogwood
EVERGREEN TREES	
Thuja occidentalis 'Degroot's Spire'	Degroot's Spire Arborvitae
Ilex opaca	American Holly
Juniper virginiana 'Taylor'	Taylor Eastern Red Cedar
Picea abies 'Cupressiana'	Curpressina Norway Spruce
SHRUBS	
Aronia arbutifolia	Chokeberry
Comptonia peregrina	Sweetfern
Clethra alnifolia	Summersweet
Fothergill gardenii	Dwarf Fothergilla
Hamamelis	Witch Hazel
Hydrangea	Hydrangea
Ilex glabra 'Shamrock'	Inkberry
Ilex verticillata	Winterberry
Myrica pennsylvanica	Bayberry
Rhus aromatica 'Gro-Low'	Fragrant Sumac
Viburnum	Viburunum

GROUNDCOVER / PERENNIAL / GRASS / FERN	
Perennials	
Eutrochium dubium 'Little Joe'	*Little Joe Pye weed*
Hemerocallis 'Happy Returns'	Happy Returns Daylily
Nepeta *racemosa* 'Walkers Low'	Walkers Low Catmint
Perovskia atriplicifolia	Russian Sage
Grasses	
Bouteloua gracilis	Blue Grama
Deschampsia cespitosa	Tufted Hair Grass
Calamgrostis x acutifolia 'Karl Forester'	Karl Forester Feather Reed Grass
Festuca rubra	Red Fescue
Schizachyrium scoparium	Little Bluestem
Sesleria autumnalis	Autumn Moore Grass
Sporobolus heterolepis	Prairie Dropseed
Ferns	
Athyrium	Lady Fern
Dryopteris	Wood Fern
Osmunda	Fern

Tighe&Bond

FRANCIS J. HOEY III CIVIL No. 40111 REGISTERED PROFESSIONAL ENGINEER COMMONWEALTH OF MASSACHUSETTS
02-26-21

JEAN E. CHRISTY CIVIL No. 47080 REGISTERED PROFESSIONAL ENGINEER COMMONWEALTH OF MASSACHUSETTS
2/24/21

PERMIT SET - NOT FOR CONSTRUCTION

Village at Grafton Woods

GSX-ODG, LLC

Grafton, Massachusetts

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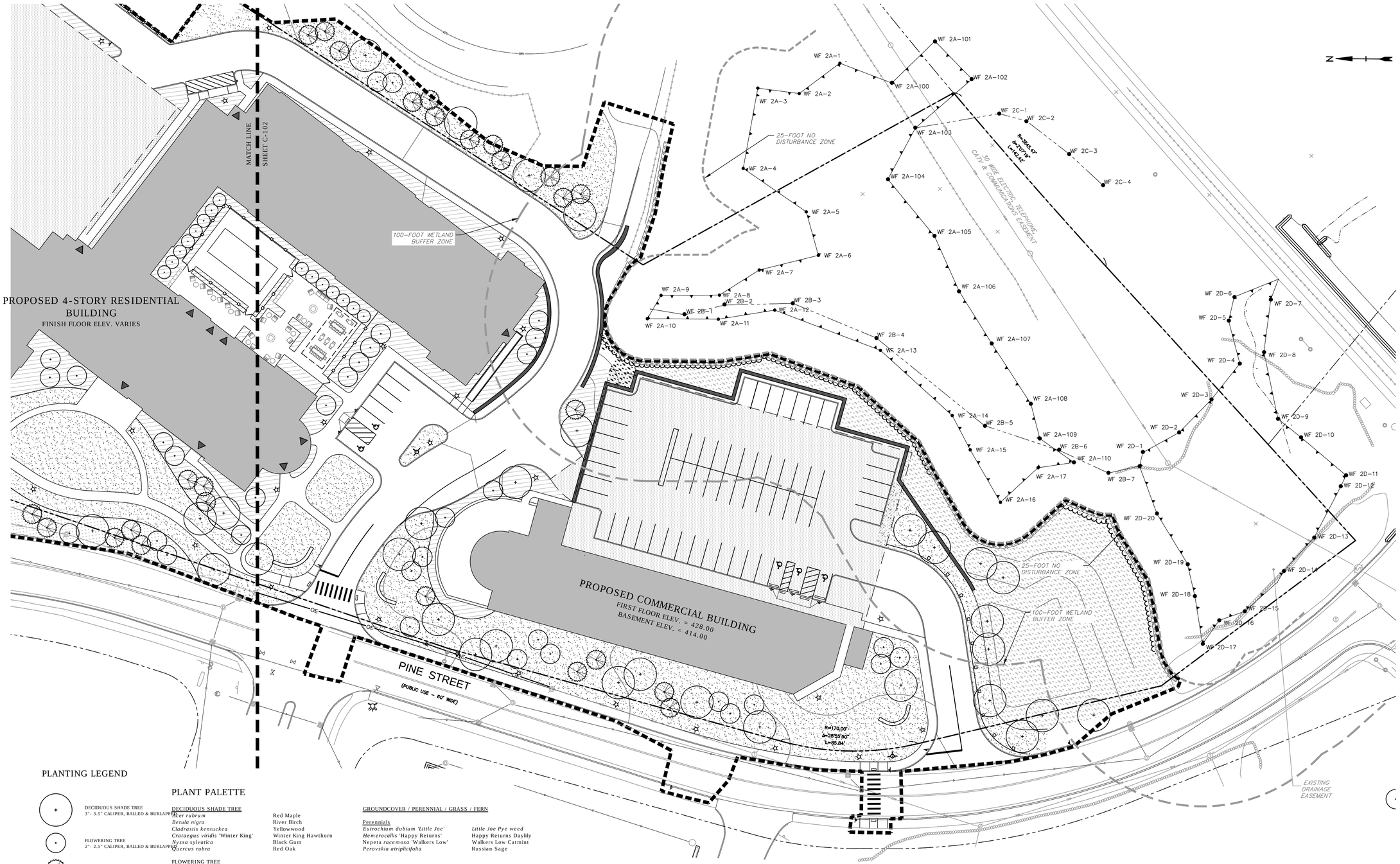
DRAWN BY:	SO / TJG
CHECKED BY:	KM
APPROVED BY:	JPV

LANDSCAPING PLAN - 1

SCALE: 1" = 30'

C-109

Last Saved: 2/26/2021
Plotted On:Feb 26, 2021-2:21pm By: SOsturk
Tighe & Bond:J:\O\O0120 OConnell\013 Village at Grafton Woods\Drawings_Figures\AutoCAD\Sheet\Design Development\240120-013A-C-Permit Drawings4.dwg



PLANTING LEGEND

- DECIDUOUS SHADE TREE — 3"- 3.5" CALIPER, BALLED & BURLAPPED
- FLOWERING TREE — 2"- 2.5" CALIPER, BALLED & BURLAPPED
- EVERGREEN TREE — 8'-10' HT, BALLED & BURLAPPED
- SHRUB, VARIED TYPE AND SIZE
- SHRUB AND GROUNDCOVER MIX
- LAWN
- REINFORCED TURF
- NO MOW MIX LAWN
- CONSERVATION SEED MIX

PLANT PALETTE

DECIDUOUS SHADE TREE	
Acer rubrum	Red Maple
Betula nigra	River Birch
Cladrastis kentuckea	Yellowwood
Crataegus viridis 'Winter King'	Winter King Hawthorn
Nyssa sylvatica	Black Gum
Quercus rubra	Red Oak
FLOWERING TREE	
Amelanchier canadensis	Serviceberry
Cercis canadensis	Eastern Redbud
Cornus florida	Flowering Dogwood
EVERGREEN TREES	
Thuja occidentalis 'Degroot's Spire'	Degroot's Spire Arborvitae
Ilex opaca	American Holly
Juniper virginiana 'Taylor'	Taylor Eastern Red Cedar
Picea abies 'Cupressiana'	Curpressina Norway Spruce
SHRUBS	
Aronia arbutifolia	Chokeberry
Comptonia peregrina	Sweetfern
Clethra alnifolia	Summersweet
Fothergill gardenii	Dwarf Fothergilla
Hamamelis	Witch Hazel
Hydrangea	Hydrangea
Ilex glabra 'Shamrock'	Inkberry
Ilex verticillata	Winterberry
Myrica pennsylvanica	Bayberry
Rhus aromatica 'Gro-Low'	Fragrant Sumac
Viburnum	Viburunum
GROUNDCOVER / PERENNIAL / GRASS / FERN	
Perennials	
Eutrochium dubium 'Little Joe'	*Little Joe Pye weed*
Hemerocallis 'Happy Returns'	Happy Returns Daylily
Nepeta racemosa 'Walkers Low'	Walkers Low Catmint
Perovskia atriplicifolia	Russian Sage
Grasses	
Bouteloua gracilis	Blue Grama
Deschampsia cespitosa	Tufted Hair Grass
Calamgrostis x acutifolia 'Karl Forester'	Karl Forester Feather Reed Grass
Festuca rubra	Red Fescue
Schizachyrium scoparium	Little Bluestem
Sesleria autumnalis	Autumn Moore Grass
Sporobolus heterolepis	Prairie Dropseed
Ferns	
Athyrium	Lady Fern
Dryopteris	Wood Fern
Osmunda	Fern

MATCH LINE SHEET C-102

0 60' 120'
SCALE: 1" = 60'

Tighe&Bond

PERMIT SET - NOT FOR CONSTRUCTION

Village at Grafton Woods

GSX-ODG, LLC

Grafton, Massachusetts

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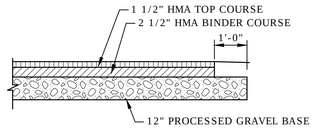
APPROVED BY:	JPV

LANDSCAPING PLAN - 2

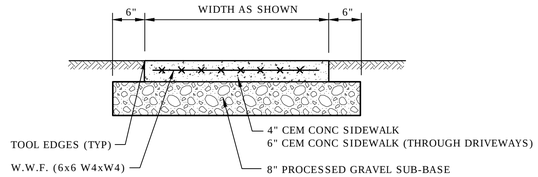
SCALE: 1" = 30'

C-110

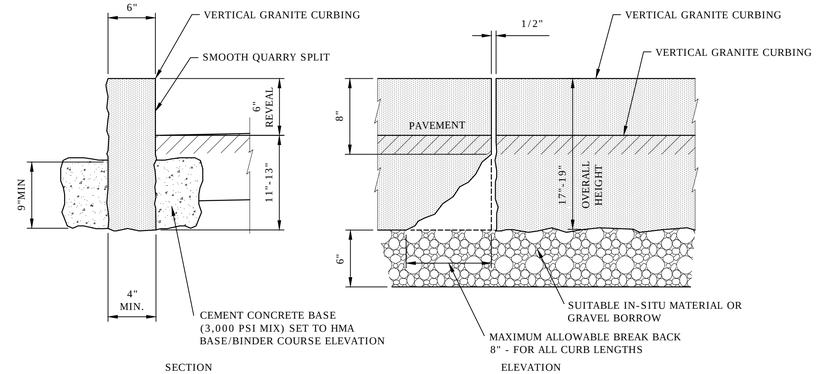
Last Saved: 2/26/2021
Plotted On:Feb 26, 2021-2:22pm By: SOzturk
Tighe & Bond:J:\O\O0120 OConnell\013 Village at Grafton Woods\Drawings_Figures\AutoCAD\Sheet\Design Development\240120-013A-C-Permit Drawings4.dwg



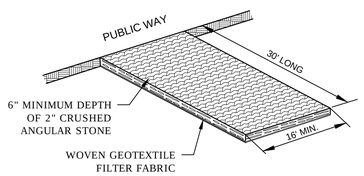
HMA DRIVEWAYS & PARKING AREAS
NO SCALE



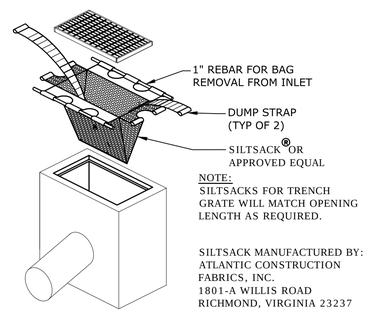
CEMENT CONCRETE SIDEWALK
NO SCALE



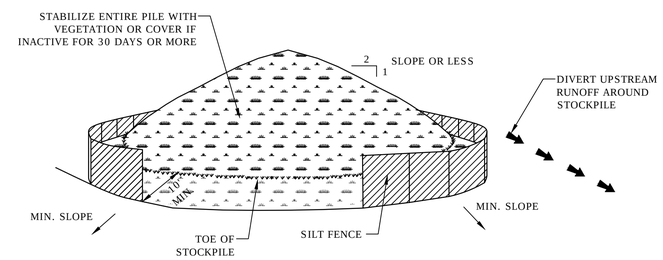
GRANITE CURB TYPE VA4
NO SCALE



CONSTRUCTION ENTRANCE
NO SCALE



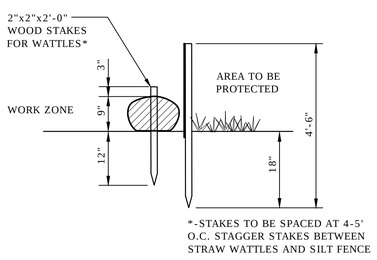
SILTSACK® EROSION CONTROL
NO SCALE



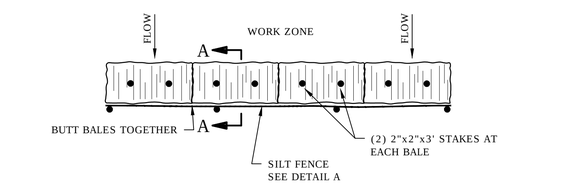
INSTALLATION NOTES:

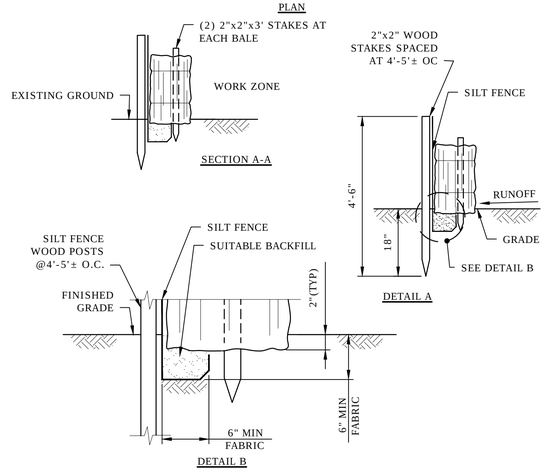
1. AREA CHOSEN FOR STOCKPILING OPERATIONS SHALL BE DRY AND STABLE.
2. MAXIMUM SLOPE OF STOCKPILE SHALL BE 2H:1V.
3. UPON COMPLETION OF SOIL STOCKPILING, EACH PILE SHALL BE SURROUNDED WITH EITHER SILT FENCING OR HAYBALES, THEN STABILIZED WITH VEGETATION OR COVERED.
4. SOIL STOCKPILE MUST BE KEPT OUTSIDE THE 100-FOOT BUFFER ZONE.

SOIL STOCKPILING
NO SCALE



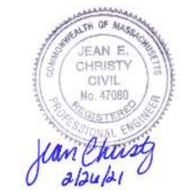
EROSION CONTROL BARRIER
NO SCALE





STRAW BALES & SILTATION FENCE FOR WASHOUT AREA
NO SCALE

Tighe&Bond



PERMIT SET - NOT FOR CONSTRUCTION

Village at Grafton Woods

GSX-ODG, LLC

Grafton, Massachusetts

MARK	DATE	DESCRIPTION

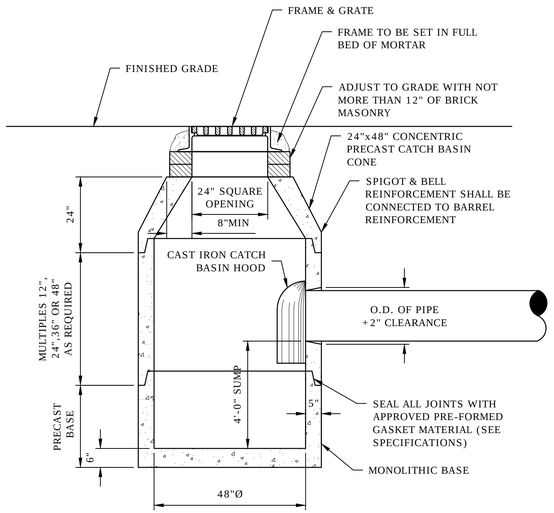
PROJECT NO:	O0120013A-07
DATE:	JANUARY 2021
FILE:	240120-013A-C-Details3.dwg
DRAWN BY:	SO / TJG
CHECKED BY:	KM
APPROVED BY:	FJH

SITE DETAILS - 1

SCALE: NO SCALE

C-501

Last Saved: 2/26/2021
Plotted On:Feb 26, 2021-2:22pm By: SOzturk
Tighe & Bond:J:\O\O0120 OConnell\013 Village at Grafton Woods\Drawings_Figures\AutoCAD\Sheet\Design Development\240120-013A-C-Details3.dwg



NOTES:
1. FOR USE WITH PVC PIPE, PROVIDE RUBBER BOOT SIMILAR TO MANHOLE DETAIL.
2. FOR USE WITH OTHER TYPES OF PIPE, SEAL JOINT BETWEEN PIPE AND CATCH BASIN WITH GROUT.

PRECAST CONCRETE CATCH BASIN
NO SCALE

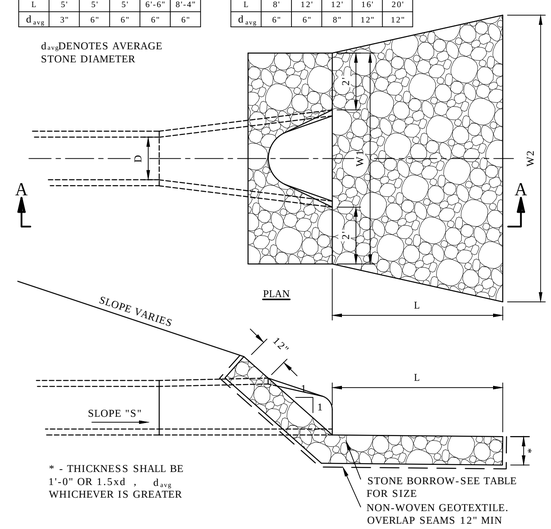
DIMENSIONS FOR "S"=1.0%

D	12"	15"	18"	21"	24"
W1	6'	6'-6"	7'	7'-6"	8'
W2	6'	8'	10'	12'	14'
L	5'	5'	5'	6'-6"	8'-4"
d_{avg}	3"	6"	6"	6"	6"

DIMENSIONS FOR "S"=5.0%

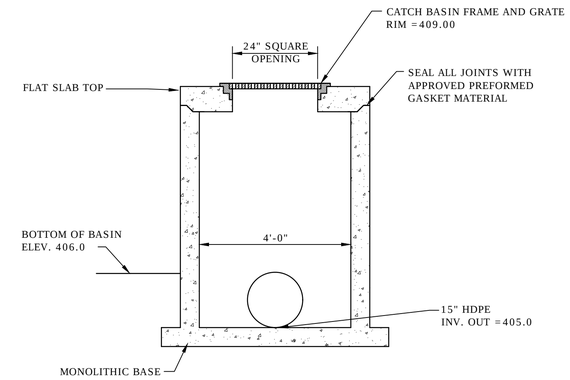
D	12"	15"	18"	21"	24"
W1	6'	6'-6"	7'	7'-6"	8'
W2	14'	18'	18'	22'	26'
L	8'	12'	12'	16'	20'
d_{avg}	6"	6"	8"	12"	12"

d_{avg} DENOTES AVERAGE STONE DIAMETER

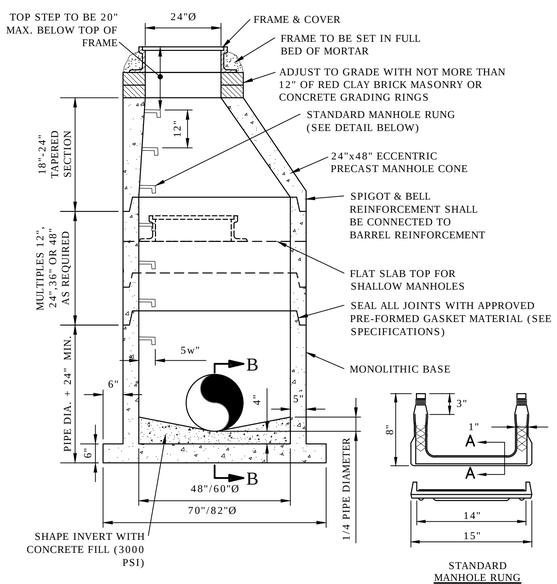


SECTION A-A

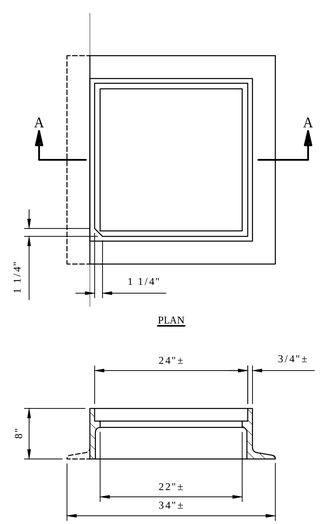
STONE OUTLET
NO SCALE



OUTLET CONTROL STRUCTURE 1 (OCS-1)
NO SCALE

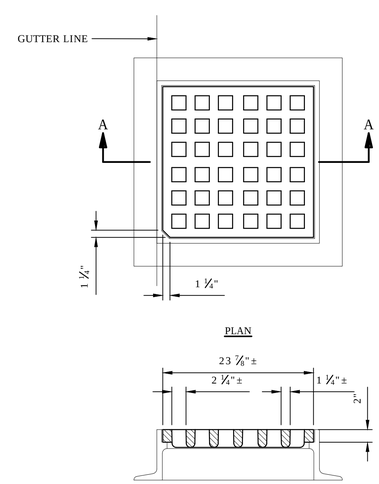


48"/60" PRECAST DRAIN MANHOLE (DMH)
NO SCALE



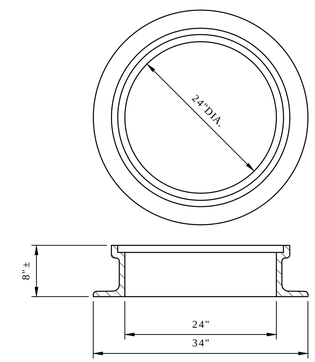
NOTES:
1. MINIMUM FRAME WEIGHT:
   4 FLANGE - 295± LBS
   3 FLANGE - 265± LBS
2. MATERIAL - CAST IRON, SEE SPECIFICATIONS
3. FOR ADDITIONAL INFORMATION SEE MHD 201.6.0

CATCH BASIN FRAME
NO SCALE

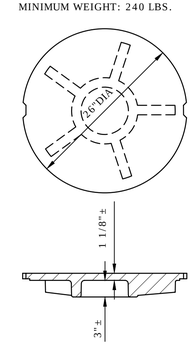


NOTES:
1. MINIMUM WEIGHT OF GRATE - 190 LBS.
2. MATERIAL - CAST IRON, SEE SPECIFICATIONS.

CATCH BASIN GRATE
NO SCALE



STANDARD MANHOLE FRAME
MINIMUM WEIGHT: 240 LBS.

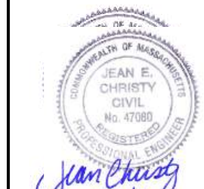


STANDARD MANHOLE COVER
MINIMUM WEIGHT: 200 LBS.

NOTES:
1. FRAME AND COVER SHALL BE PROVIDED FROM THE SAME MANUFACTURER.
2. LETTERING SHALL BE CAST INTO COVERS AS SPECIFIED.

MANHOLE FRAME & COVER
NO SCALE

Tighe&Bond



PERMIT SET - NOT FOR CONSTRUCTION

Village at Grafton Woods

GSX-ODG, LLC

Grafton, Massachusetts

MARK	DATE	DESCRIPTION

PROJECT NO:	O0120013A-07
DATE:	JANUARY 2021
FILE:	240120-013A-C-Details3.dwg
DRAWN BY:	SO / TJG
CHECKED BY:	KM
APPROVED BY:	FJH

SITE DETAILS - 2

SCALE: NO SCALE

C-502

Last Saved: 2/26/2021
Plotted On:Feb 26, 2021-2:22pm By: SOzturk
Tighe & Bond:J:\O\O0120 OConnell\013 Village at Grafton Woods\Drawings_Figures\AutoCAD\Sheet\Design Development\240120-013A-C-Details3.dwg

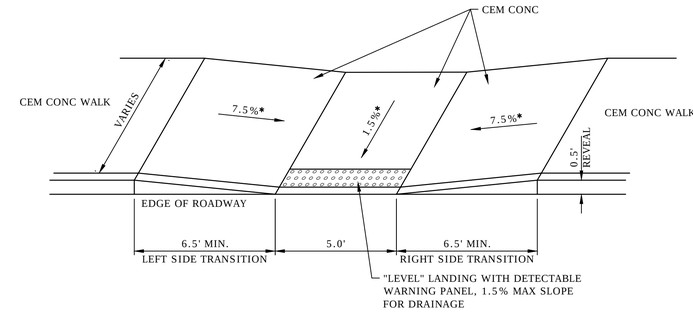
SIDEWALK AND WHEELCHAIR RAMP NOTES:

1. WIDTH OF WALKWAYS SHALL NOT BE LESS THAN 48 INCHES, EXCLUDING CURB.
2. AN UNOBSTRUCTED PATH OF TRAVEL SHALL BE PROVIDED WHICH IS AT LEAST 36 INCHES CLEAR, EXCLUDING CURB.
3. LOW SIDE TRANSITION LENGTH SHALL BE A MINIMUM OF 6'-6".
4. HIGH SIDE TRANSITION LENGTH AS SHOWN ON PLANS.
5. THE WHEELCHAIR RAMP SLOPES AND SIDE SLOPES (TRANSITIONS) WILL BE 7.5% WITH A CONSTRUCTION TOLERANCE OF 0.5%±. HOWEVER, THESE SLOPES MAY BE FLATTER WHEN WARRANTED BY SURROUNDING CONDITIONS.
6. WHERE THE ROAD PROFILE EXCEEDS 4%, THE HIGH SIDE TRANSITION LENGTH UNDER ANY CONDITIONS NEED NOT EXCEED 15-FEET.
7. AT NO TIME IS ANY PART OF THE WHEELCHAIR RAMP, EXCLUDING CURB TRANSITIONS, TO BE LOCATED OUTSIDE THE CROSSWALK. THE WHEELCHAIR RAMP ENTRANCE IS TO BE CENTERED IN THE CROSSWALK WHENEVER POSSIBLE.
8. THE ENTRANCE OF A WHEELCHAIR RAMP SHALL BE FLUSH WITH THE ROADWAY.
9. TESTING SURFACE: WHEN TESTING WITH A STRAIGHTEDGE PLACED PARALLEL TO THE LINE OF SLOPE THERE SHALL BE NO DEVIATION FROM A TRUE SURFACE IN EXCESS OF 1/4".
10. DETECTABLE WARNING PANELS ARE REQUIRED ON ALL OF THE PROPOSED WHEELCHAIR RAMPS AND ARE TO BE INSTALLED IN ACCORDANCE WITH THE CONSTRUCTION STANDARD M/E 107.6.5R (DECEMBER 2004).

** HIGH SIDE TRANSITION LENGTH

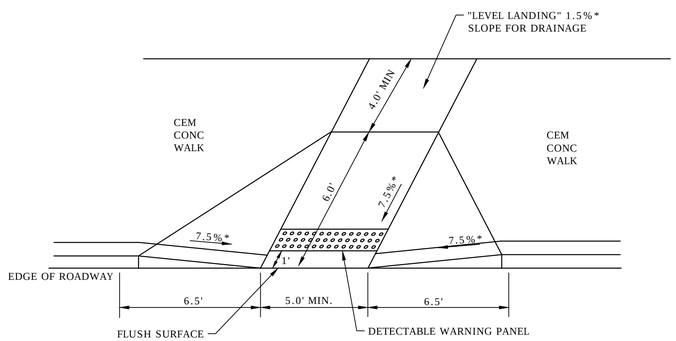
ROADWAY PROFILE GRADE, %	TRANSITION LENGTH
0	6'-6"
>0-1	7'-8"
>1-2	9'-0"
>2-3	11'-0"
>3-4	14'-0"
>4	15'-0" MAX

NOTE:
** BASED ON A DESIGN SLOPE OF 7.5% AND A CURB REVEAL OF 6".



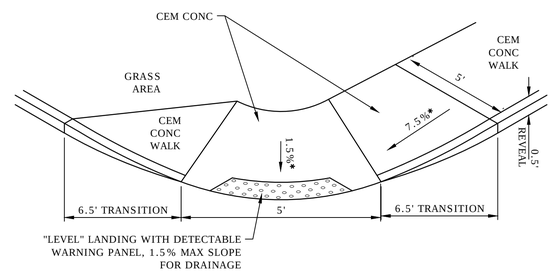
* TOLERANCE FOR CONSTRUCTION ±.5%

TYPICAL WHEELCHAIR RAMP - TYPE 1
NO SCALE



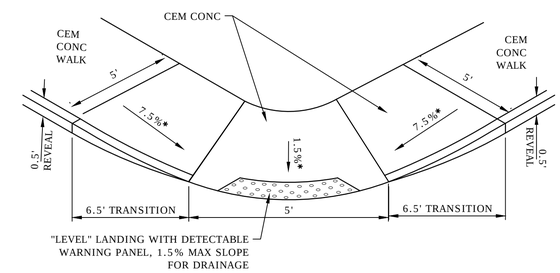
* TOLERANCE FOR CONSTRUCTION 0.5%±

TYPICAL WHEELCHAIR RAMP - TYPE 2
NO SCALE



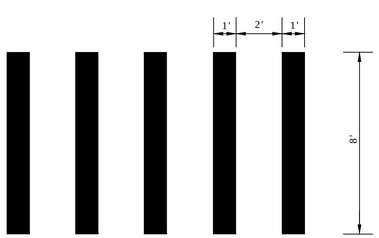
* TOLERANCE FOR CONSTRUCTION ±.5%

TYPICAL WHEELCHAIR RAMP - TYPE 3
NO SCALE



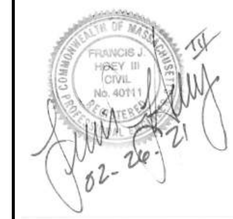
* TOLERANCE FOR CONSTRUCTION ±.5%

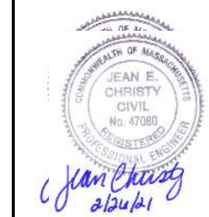
TYPICAL WHEELCHAIR RAMP - TYPE 4
NO SCALE



CROSSWALK STRIPING
NO SCALE

Tighe&Bond





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Village at Grafton Woods

GSX-ODG, LLC

Grafton, Massachusetts

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DRAWN BY:	SO / TJG
CHECKED BY:	KM
APPROVED BY:	FJH

SITE DETAILS - 3

SCALE: NO SCALE

C-503

Last Saved: 2/26/2021
Plotted On:Feb 26, 2021-2:22pm By: SOzurk
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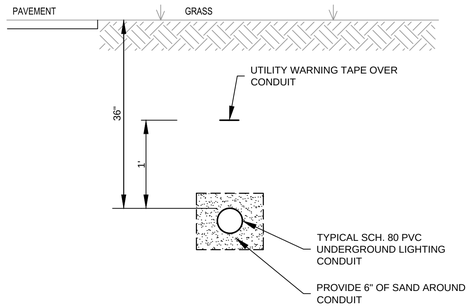
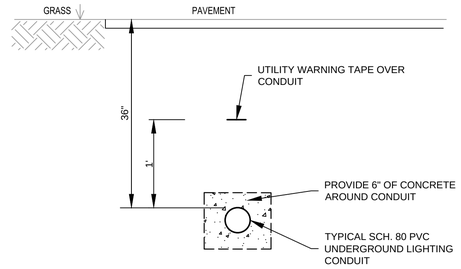


NOTES:

1. MAINTAIN 3" MIN SPACING BETWEEN CONDUITS OF THE SAME SYSTEM
2. MAINTAIN MINIMUM 1' SEPARATION BETWEEN ALL ELECTRICAL CONDUIT AND OTHER UNDERGROUND SYSTEMS.

LIGHTING CONDUIT DETAIL

NO SCALE

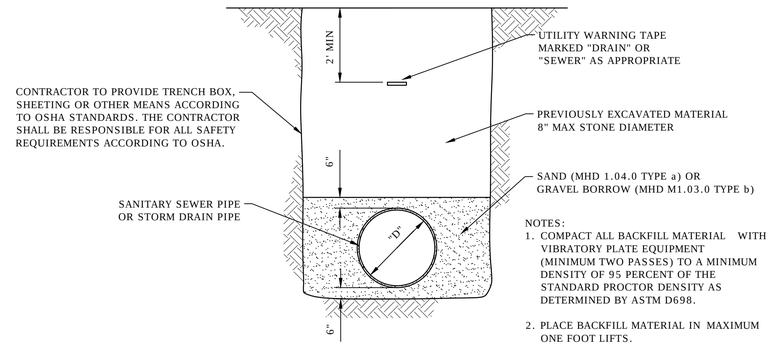


NOTES:

1. MAINTAIN 3" MIN SPACING BETWEEN CONDUITS OF THE SAME SYSTEM
2. MAINTAIN MINIMUM 1' SEPARATION BETWEEN ALL ELECTRICAL CONDUIT AND OTHER UNDERGROUND SYSTEMS.

CONCRETE ENCASED LIGHTING CONDUIT DETAIL

NO SCALE

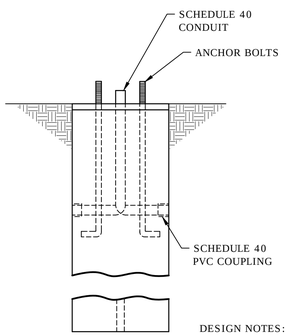


NOTES:

1. COMPACT ALL BACKFILL MATERIAL WITH VIBRATORY PLATE EQUIPMENT (MINIMUM TWO PASSES) TO A MINIMUM DENSITY OF 95 PERCENT OF THE STANDARD PROCTOR DENSITY AS DETERMINED BY ASTM D698.
2. PLACE BACKFILL MATERIAL IN MAXIMUM ONE FOOT LIFTS.
3. FOR PIPES LESS THAN 24" IN DIAMETER THE TRENCH WIDTH SHALL BE 5.0'. FOR PIPES 24" IN DIAMETER AND GREATER, TRENCH WIDTH SHALL BE THE PIPE DIAMETER + 3.0'.

TYPICAL DRAIN LINE AND SEWER TRENCH SECTION

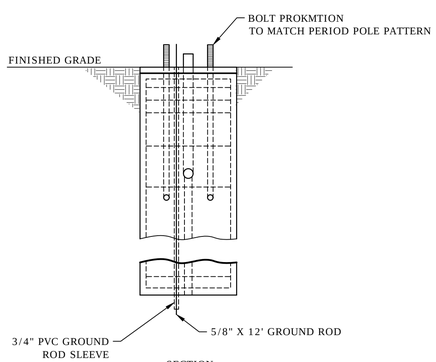
NO SCALE



DESIGN NOTES:

1. CONTRACTOR TO PROVIDE PROFESSIONAL ENGINEER STAMPED FOUNDATION DESIGN.

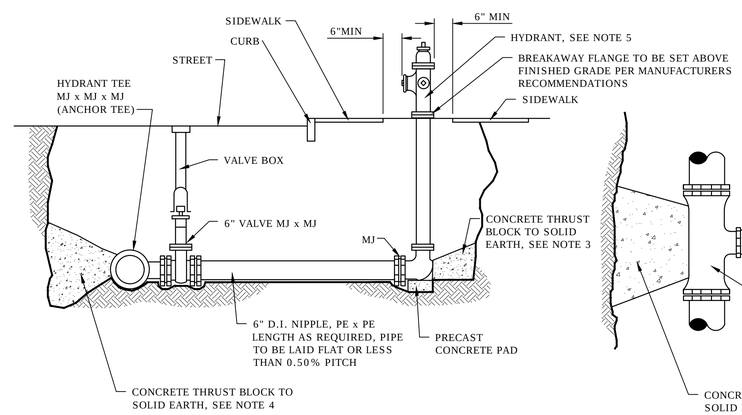
ELEVATION



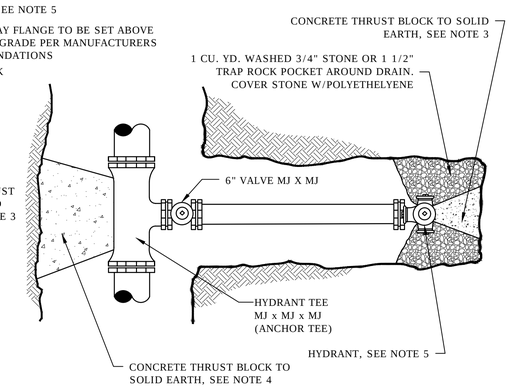
SECTION

STANDARD LIGHTPOLE FOUNDATION

NO SCALE



ELEVATION



PLAN

NOTES

1. ALL CONCRETE TO BE CAST-IN-PLACE (3000 PSI)
2. ALL MJ JOINTS SHALL HAVE RETAINER GLANDS
3. CARE SHALL BE TAKEN TO SHIELD HYDRANT BASE DRAIN HOLES DURING PLACEMENT OF THE CONCRETE THRUST BLOCK. DRAIN HOLES SHALL BE VERIFIED AS OPEN AND FREE OF OBSTRUCTIONS PRIOR TO BACKFILLING.
4. CARE SHALL BE TAKEN TO SHIELD ALL MECHANICAL JOINT GLANDS AND BOLTS DURING PLACEMENT OF CONCRETE THRUST BLOCK. ALL BOLTS AND GLANDS SHALL BE FREE AND UNOBSTRUCTED BEFORE BACKFILLING.
5. HYDRANT SHALL BE SET PLUMB. VERTICAL HYDRANT EXTENSIONS SHALL BE USED AS NECESSARY TO PROPERLY LOCATE THE BREAKAWAY FLANGE PER MANUFACTURERS RECOMMENDATIONS.
6. POLYETHYLENE SHEETING SHALL BE PLACED OVER THE FITTING AND/OR HYDRANT BASE TO PREVENT DIRECT CONTACT OF CONCRETE WITH THE FITTING.

HYDRANT INSTALLATION

NO SCALE

Tighe&Bond

PERMIT SET - NOT FOR CONSTRUCTION

Village at Grafton Woods

GSX-ODG, LLC

Grafton, Massachusetts

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SITE DETAILS - 4

SCALE: NO SCALE

C-504

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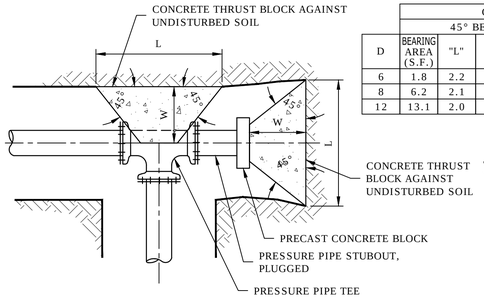
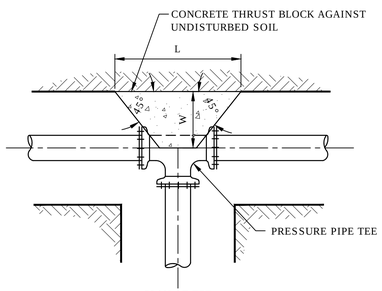
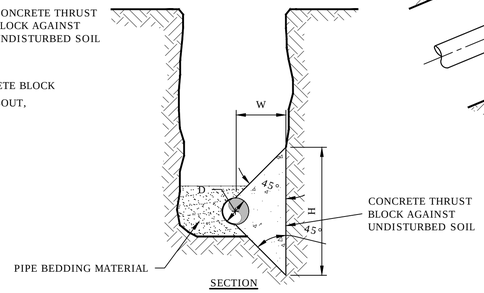


PLAN AT TEE W/STUBOUT FOR FUTURE

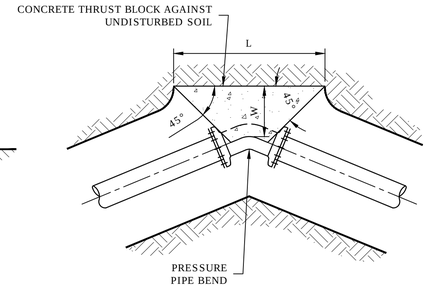
CONCRETE THRUSTBLOCK								
	45° BEND				90° BEND			
D	BEARING AREA (S.F.)	"L"	"H"	"W"	BEARING AREA (S.F.)	"L"	"H"	"W"
6	1.8	2.2	1.5	2.4	6.6	2.2	2.1	3.1
8	6.2	2.1	2.0	3.1	11.4	2.1	2.8	4.1
12	13.1	2.0	3.0	4.4	24.2	2.0	4.0	6.0



PLAN AT TEE



SECTION



PLAN AT BEND

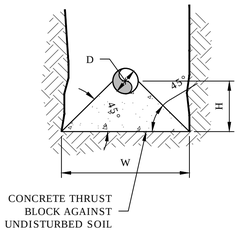
NOTES:

1. DIMENSIONS SHOWN CALCULATED PER 125 PSI INTERNAL PIPE PRESSURE FOR SOIL BEARING LOADS OF 1500 PSF.
2. CONCRETE THRUST BLOCKS SHALL BE CONSTRUCTED OF CONCRETE POURED AGAINST UNDISTURBED SOIL.
3. DIMENSIONS L, W, & H MAY BE ADJUSTED TO MEET FIELD CONDITIONS PROVIDED THE BEARING AREA REMAINS UNCHANGED.
4. THE HEIGHT OF THE BLOCK (H) SHALL BE LESS THAN OR EQUAL TO HALF THE TRENCH DEPTH.
5. POLYETHYLENE SHEETING SHALL BE PLACED OVER MJ FITTINGS TO PREVENT DIRECT CONTACT BETWEEN CONCRETE AND THE FITTING.

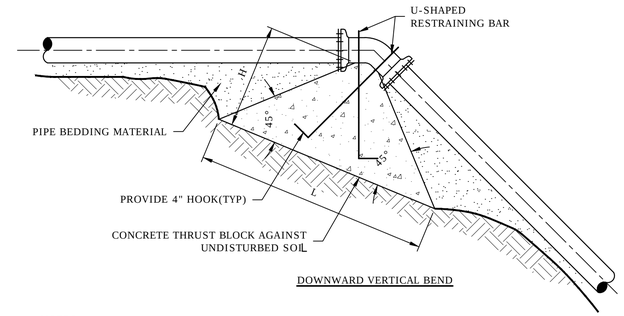
CONCRETE THRUST BLOCK
FOR HORIZONTAL BENDS AND TEES
NO SCALE

DOWNWARD VERTICAL BENDS							
D	VOLUME (C.F.)	BEARING AREA (S.F.)	"H"	"L"	"W"*	RESTRAINING BAR SIZE	BAR EMBEDMENT LENGTH
6	33	9.1	22	60	44	xx	xx
8	57	11.9	29	60	57	xx	xx
12	121	17.4	42	60	83	xx	xx

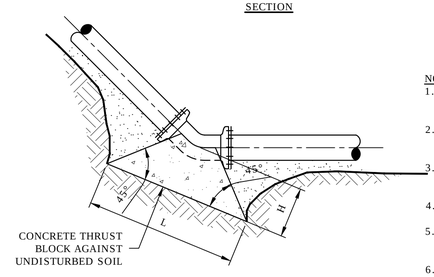
* "W" IS ASSUMED TO BE THE WIDTH OF THE TRENCH



SECTION



DOWNWARD VERTICAL BEND



UPWARD VERTICAL BEND

NOTES:

1. DIMENSIONS SHOWN CALCULATED FOR 125 PSI INTERNAL PIPE PRESSURE, SOIL BEARING LOADS OF 1500 PSF, BASED ON A 45° BEND.
2. CONCRETE THRUST BLOCKS SHALL BE CONSTRUCTED OF CONCRETE MATERIAL POURED AGAINST UNDISTURBED SOIL.
3. DIMENSIONS L, W, & H MAY BE ADJUSTED TO MEET FIELD CONDITIONS, PROVIDED THE BEARING AREA AND VOLUME REMAIN UNCHANGED.
4. RESTRAINING BARS SHALL BE ASTM A615 GRADE 60 REINFORCING STEEL.
5. THE PORTION OF THE RESTRAINING BARS EXPOSED TO SOIL SHALL BE COATED WITH TWO COATS OF BITUMASTIC MATERIAL.
6. POLYETHYLENE SHEETING SHALL BE PLACED OVER MJ FITTINGS TO PREVENT DIRECT CONTACT BETWEEN CONCRETE AND THE FITTING.

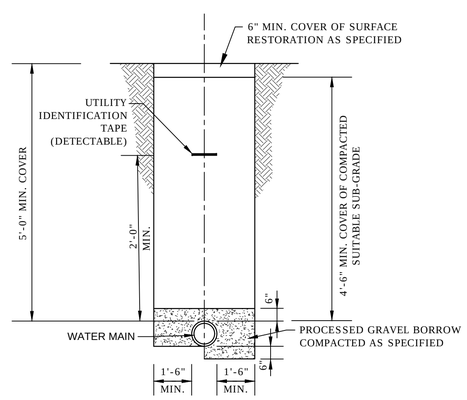
CONCRETE THRUST BLOCK
FOR VERTICAL BENDS
NO SCALE

SIZE (IN.)	FITTING	MINIMUM* RESTRAINED LENGTH, FT. ( ) INDICATES POLYWRAPPED
12"	90° BEND	67 (78)
12"	45° BEND	28 (32)
12"	22 1/2° BEND	14 (16)
12"	11 1/4° BEND	7 (8)
12"	DEAD END	142 (203)
12"	12"x6" TEE BRANCH	63 (89)
12"	12"x10" REDUCER	42 (60)
8"	90° BEND	47 (55)
8"	45° BEND	20 (23)
8"	22 1/2° BEND	10 (11)
8"	11 1/4° BEND	5 (6)
8"	DEAD END	100 (143)
6"	90° BEND	36 (42)
6"	45° BEND	15 (18)
6"	22 1/2° BEND	8 (9)
6"	11 1/4° BEND	4 (5)
6"	DEAD END	76 (108)

* MINIMUM RESTRAINED LENGTH BASED ON DIPRA, "THRUST RESTRAINT DESIGN FOR DUCTILE IRON PIPE," 3rd EDITION, 1992.

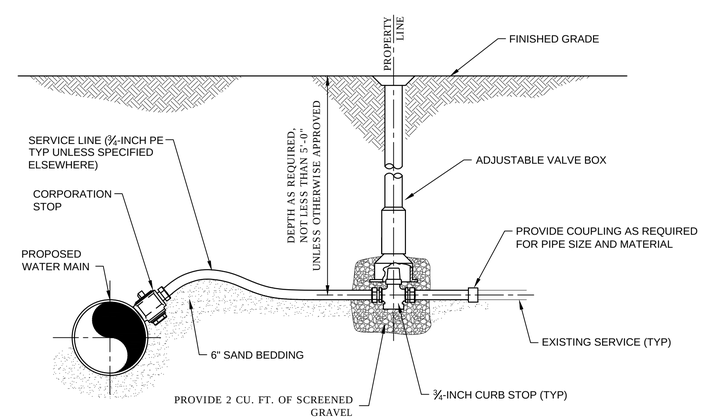
FOLLOWING CONDITIONS APPLY:
SOIL TYPE: SAND SILT
MAX. PRESSURE: 200psi
LAYING CONDITIONS: TYPE 2
BURIED DEPTH: 5'

MINIMUM RESTRAINED LENGTHS FOR DI PIPE



NOTE:
ALL WATER MAIN INSTALLATIONS WILL MEET THE MINIMUM REQUIRED SETBACK DISTANCES FROM OTHER UTILITIES AND STRUCTURES.

TYPICAL WATER MAIN TRENCH
NO SCALE



NOTES:

1. SERVICE CONNECTION LOCATIONS TO BE FIELD VERIFIED.
2. PROVIDE SERVICES AT ALL PROPERTIES UNLESS OTHERWISE APPROVED. LOCATIONS TO BE FIELD LOCATED WITH GRAFTON WATER DEPARTMENT.

WATER SERVICE CONNECTION
NO SCALE

Tighe&Bond

COMMONWEALTH OF MASSACHUSETTS FRANCIS J. HOEY III CIVIL No. 40111 REGISTERED PROFESSIONAL ENGINEER 02-26-21

COMMONWEALTH OF MASSACHUSETTS JEAN E. CHRISTY CIVIL No. 47080 REGISTERED PROFESSIONAL ENGINEER 2/26/21

PERMIT SET - NOT FOR CONSTRUCTION

Village at Grafton Woods

GSX-ODG, LLC

Grafton, Massachusetts

MARK	DATE	DESCRIPTION

PROJECT NO:	O0120013A-07
DATE:	JANUARY 2021
FILE:	240120-013A-C-Details3.dwg
DRAWN BY:	SO / TJG
CHECKED BY:	KM
APPROVED BY:	FJH

SITE DETAILS - 5

SCALE: NO SCALE

C-505

Last Saved: 2/26/2021
Plotted On:Feb 26, 2021-2:22pm By: SOzturk
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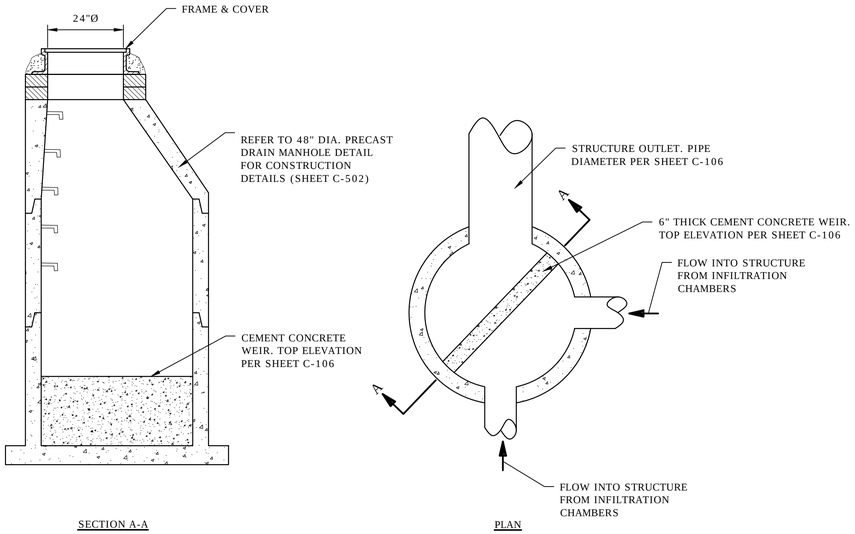
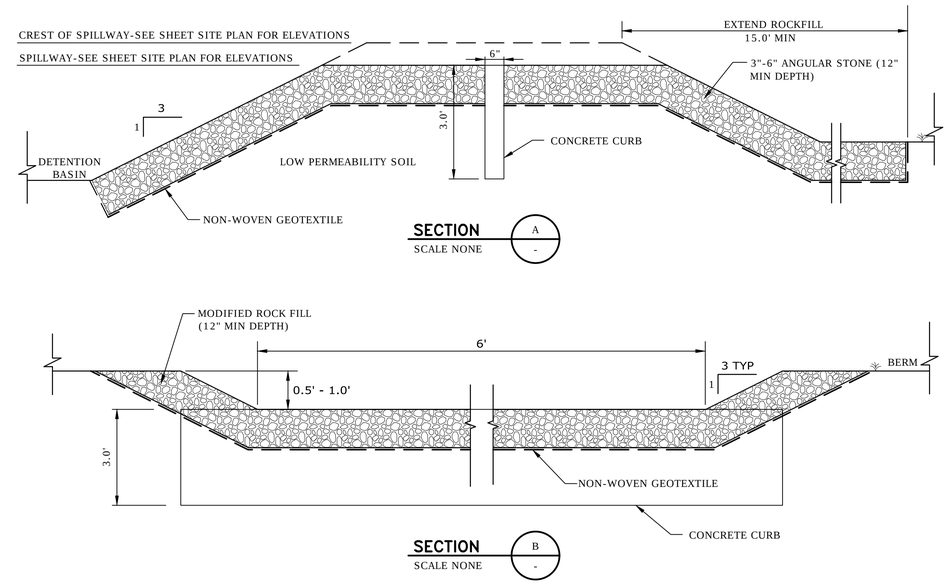
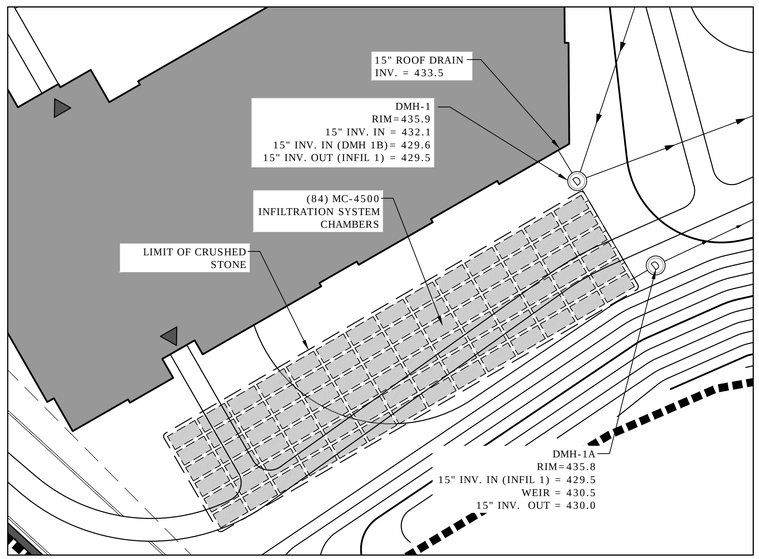


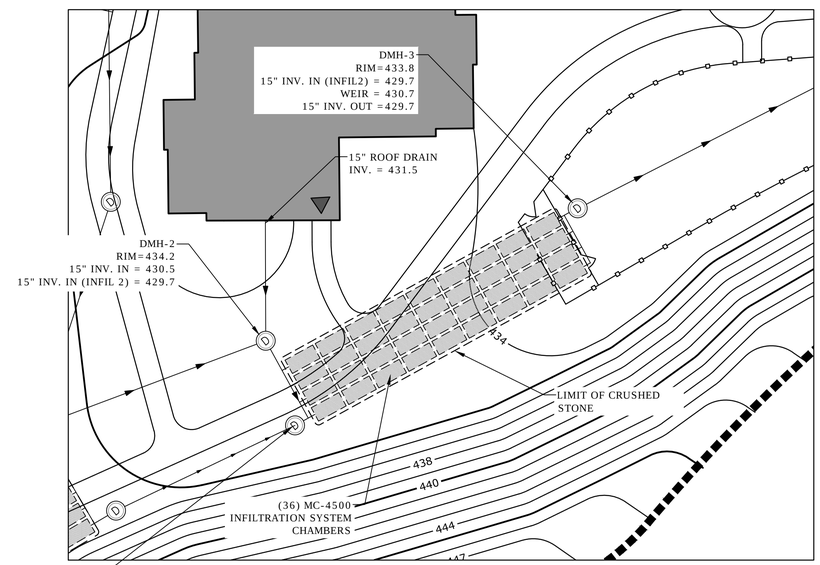
INFILTRATION SYSTEM OUTLET STRUCTURE
NO SCALE



EMERGENCY SPILLWAY
NO SCALE

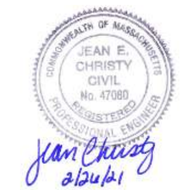


STORMWATER INFILTRATION SYSTEM 1
1" = 20'



STORMWATER INFILTRATION SYSTEM 2
1" = 20'

Tighe&Bond



PERMIT SET - NOT FOR CONSTRUCTION

Village at Grafton Woods

GSX-ODG, LLC

Grafton, Massachusetts

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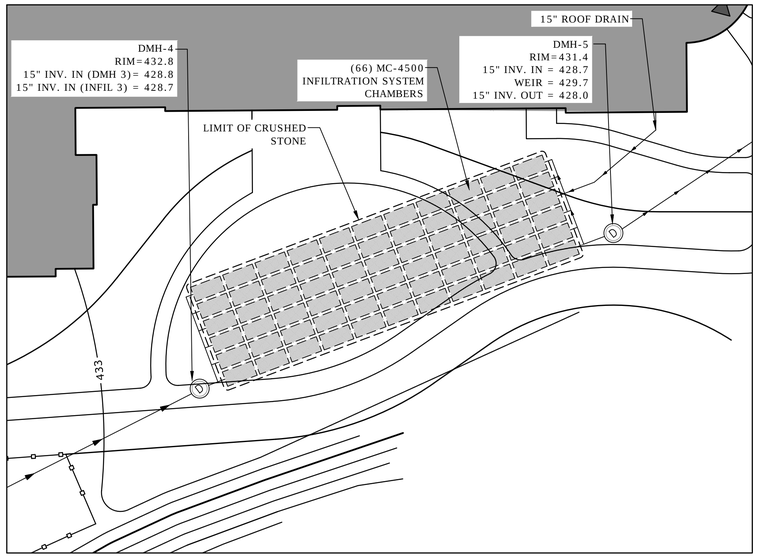
DRAWN BY:	SO / TJG
CHECKED BY:	KM
APPROVED BY:	FJH

SITE DETAILS - 6

SCALE: NO SCALE

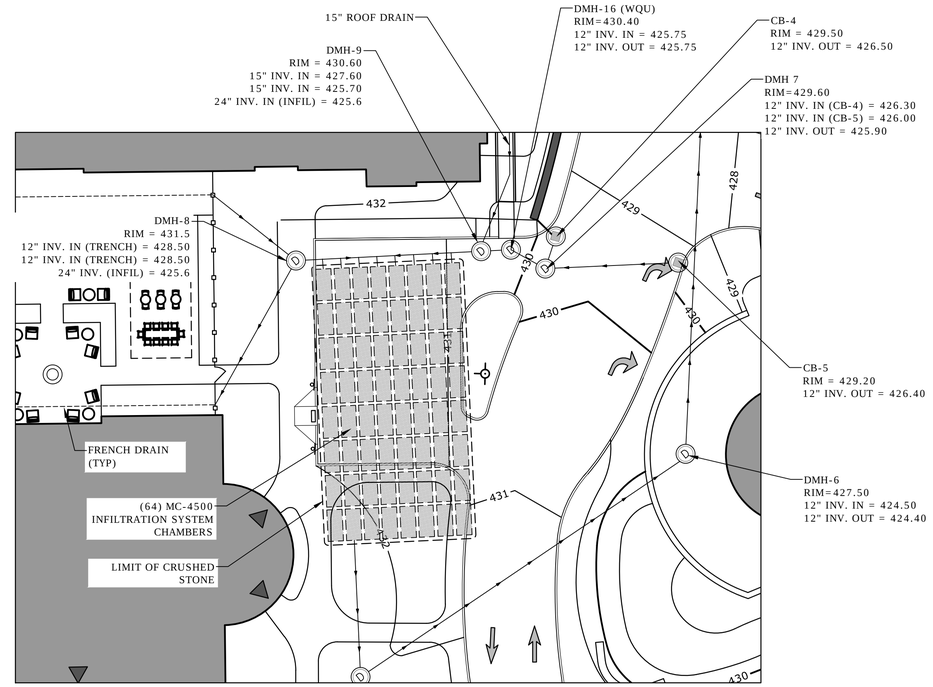
C-506

Last Saved: 2/26/2021
Plotted On:Feb 26, 2021-2:23pm By: SOrzurk
Tighe & Bond:J:\O\O0120 OConnell\013 Village at Grafton Woods\Drawings_Figures\AutoCAD\Sheet\Design Development\240120-013A-C-Details3.dwg



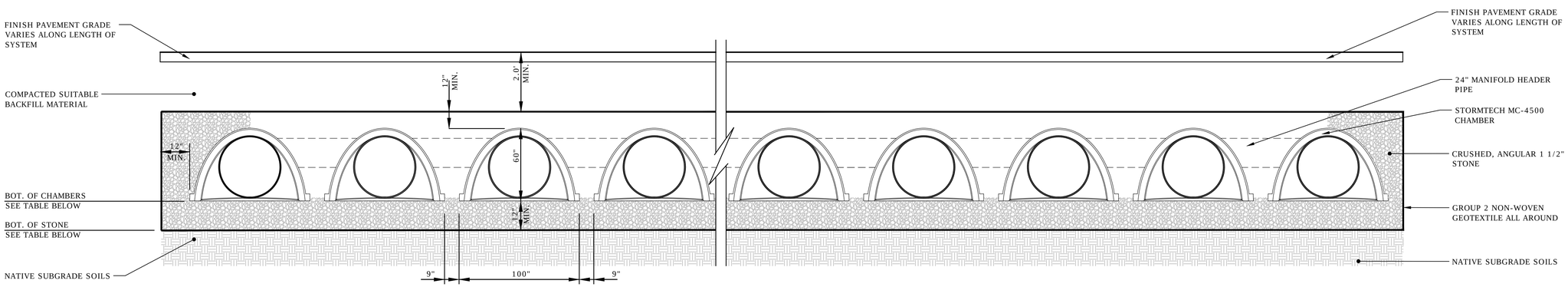
STORMWATER INFILTRATION SYSTEM 3

1" = 20'



STORMWATER INFILTRATION SYSTEM 4

1" = 20'



STORMWATER INFILTRATION SYSTEM - TYPICAL SECTION

NO SCALE

Tighe&Bond

PERMIT SET - NOT FOR CONSTRUCTION

Village at Grafton Woods

GSX-ODG, LLC

Grafton, Massachusetts

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DRAWN BY:	SO / TJG
CHECKED BY:	KM
APPROVED BY:	FJH

SITE DETAILS - 7

SCALE: AS SHOWN

C-507

Last Saved: 2/26/2021
Plotted On:Feb 26, 2021-2:23pm By: SOzturk
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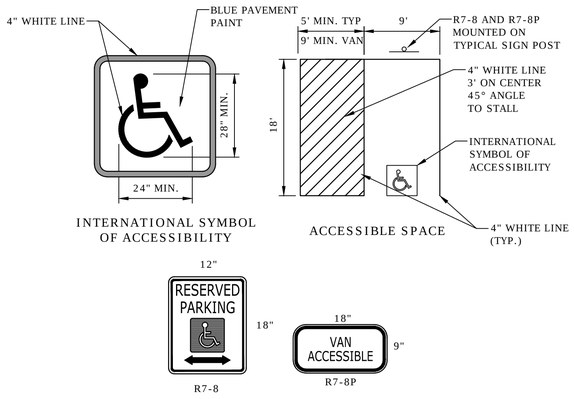
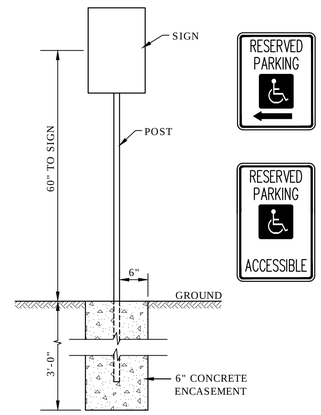
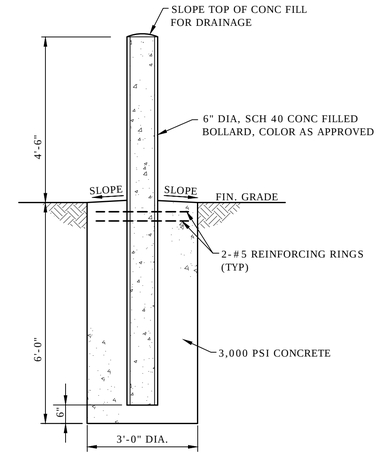


NOTES:
1. SIGN BACKGROUND - BLUE REFLECTIVE
2. LETTERS, GRAPHICS & BORDER - WHITE REFLECTIVE

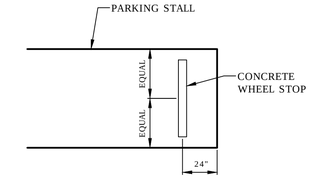
ACCESSIBLE STRIPING AND SIGNAGE DETAIL
NO SCALE



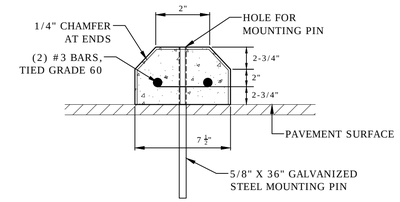
TYPICAL ACCESSIBLE SIGNPOST
NO SCALE



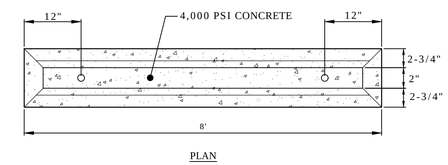
6" DIAMETER STEEL BOLLARD
NO SCALE



PLACEMENT OF WHEEL STOP

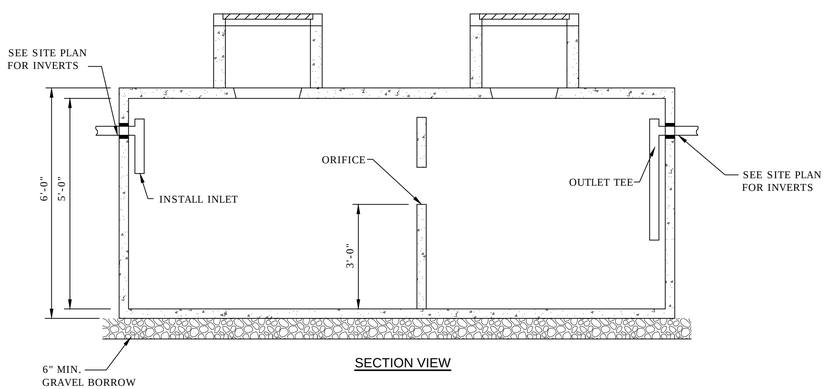


SECTION

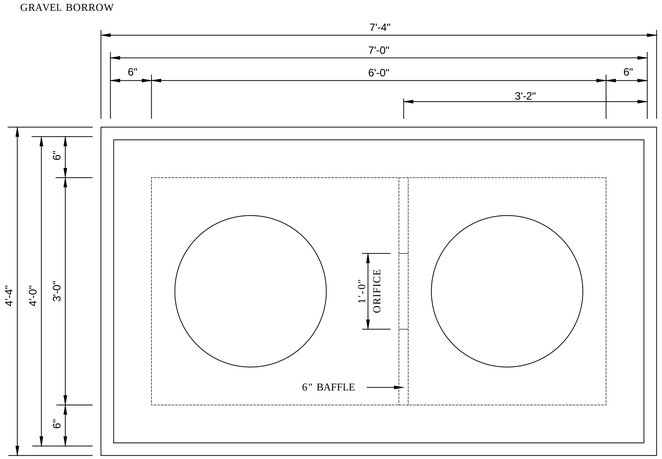


PLAN

CONCRETE WHEELSTOP
NO SCALE

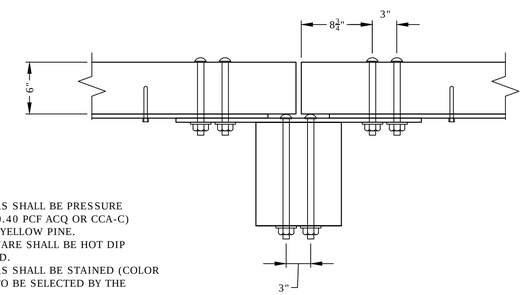


SECTION VIEW



PLAN VIEW

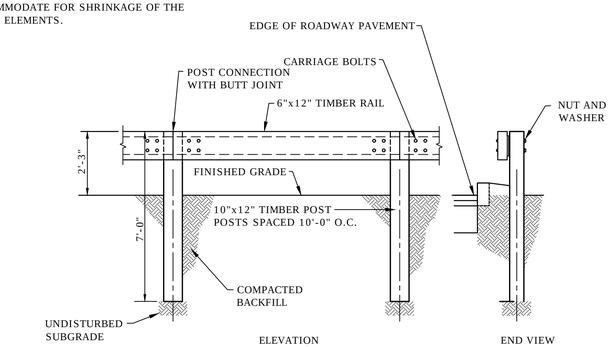
500 GALLON - 2 COMPARTMENT OIL/WATER SEPARATOR
NO SCALE



POST CONNECTION

NOTES:

1. ALL TIMBERS SHALL BE PRESSURE TREATED (0.40 PCF ACQ OR CCA-C) SOUTHERN YELLOW PINE.
2. ALL HARDWARE SHALL BE HOT DIP GALVANIZED.
3. ALL TIMBERS SHALL BE STAINED (COLOR AND TYPE TO BE SELECTED BY THE OWNER).
4. ALL CONNECTION HARDWARE SHALL BE SUFFICIENTLY TIGHTENED TO ACCOMMODATE FOR SHRINKAGE OF THE WOOD ELEMENTS.



TIMBER GUARD RAIL
NO SCALE

Tighe&Bond

PERMIT SET - NOT FOR CONSTRUCTION

Village at Grafton Woods

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SITE DETAILS - 8

SCALE: NO SCALE

C-508

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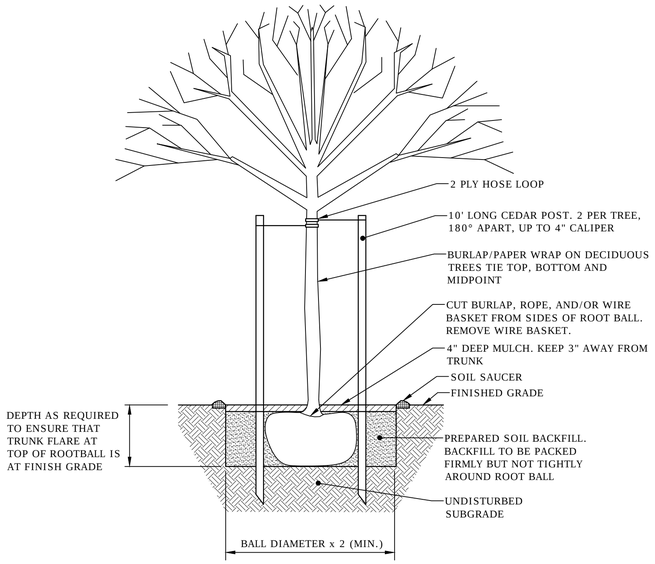
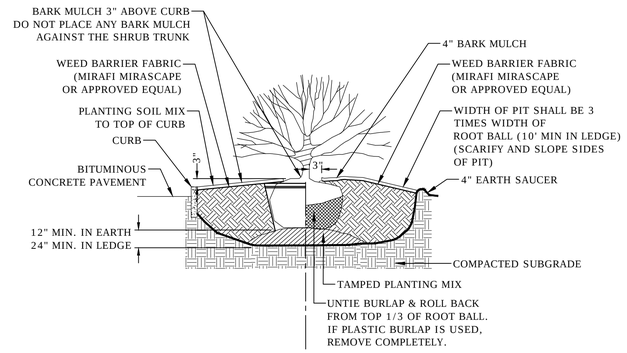
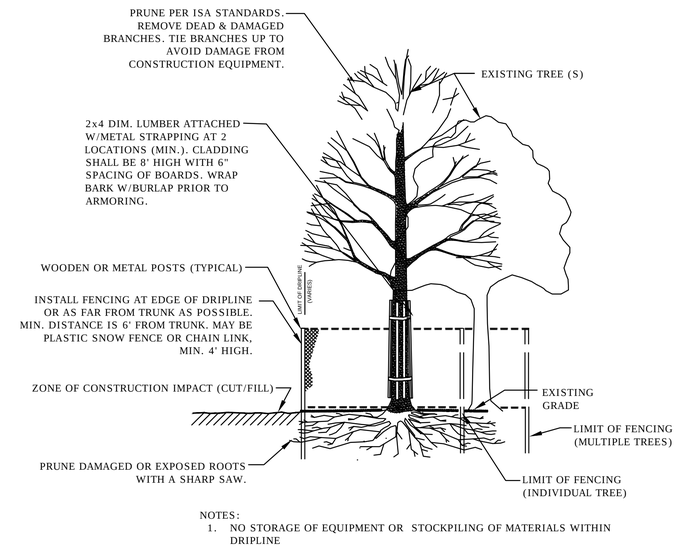


TREE PLANTING DETAIL
NO SCALE

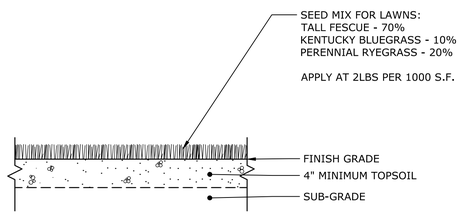


SHRUB PLANTING DETAIL
NO SCALE

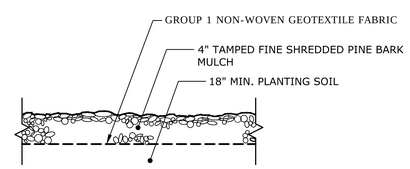


NOTES:
1. NO STORAGE OF EQUIPMENT OR STOCKPILING OF MATERIALS WITHIN DRIPLINE

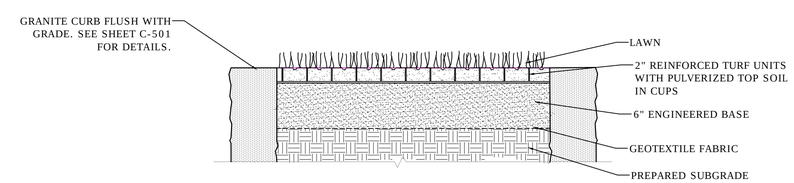
TREE PROTECTION - EXISTING TREE
NO SCALE



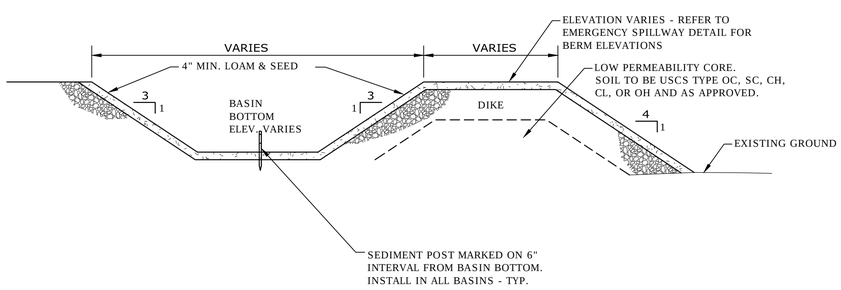
LAWN AREAS
NO SCALE



PLANT BEDS
NO SCALE



REINFORCED TURF
NO SCALE



DETENTION BASIN - BERM DETAIL
NO SCALE

Tighe&Bond

PERMIT SET - NOT FOR CONSTRUCTION

Village at Grafton Woods

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Grafton, Massachusetts

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APPROVED BY:	FJH

SITE DETAILS - 9

SCALE: NO SCALE

C-509

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