

CITY OF WALTHAM, MASSACHUSETTS

BEAR HILL ROAD & SECOND AVENUE

WATER MAIN REPLACEMENT PROJECT

JUNE 22, 2016

THE CITY OF WALTHAM

STEPHEN A. CASAZZA – CITY ENGINEER

GERARD T. SHAUGHNESSY – WATER & SEWER SUPERINTENDENT

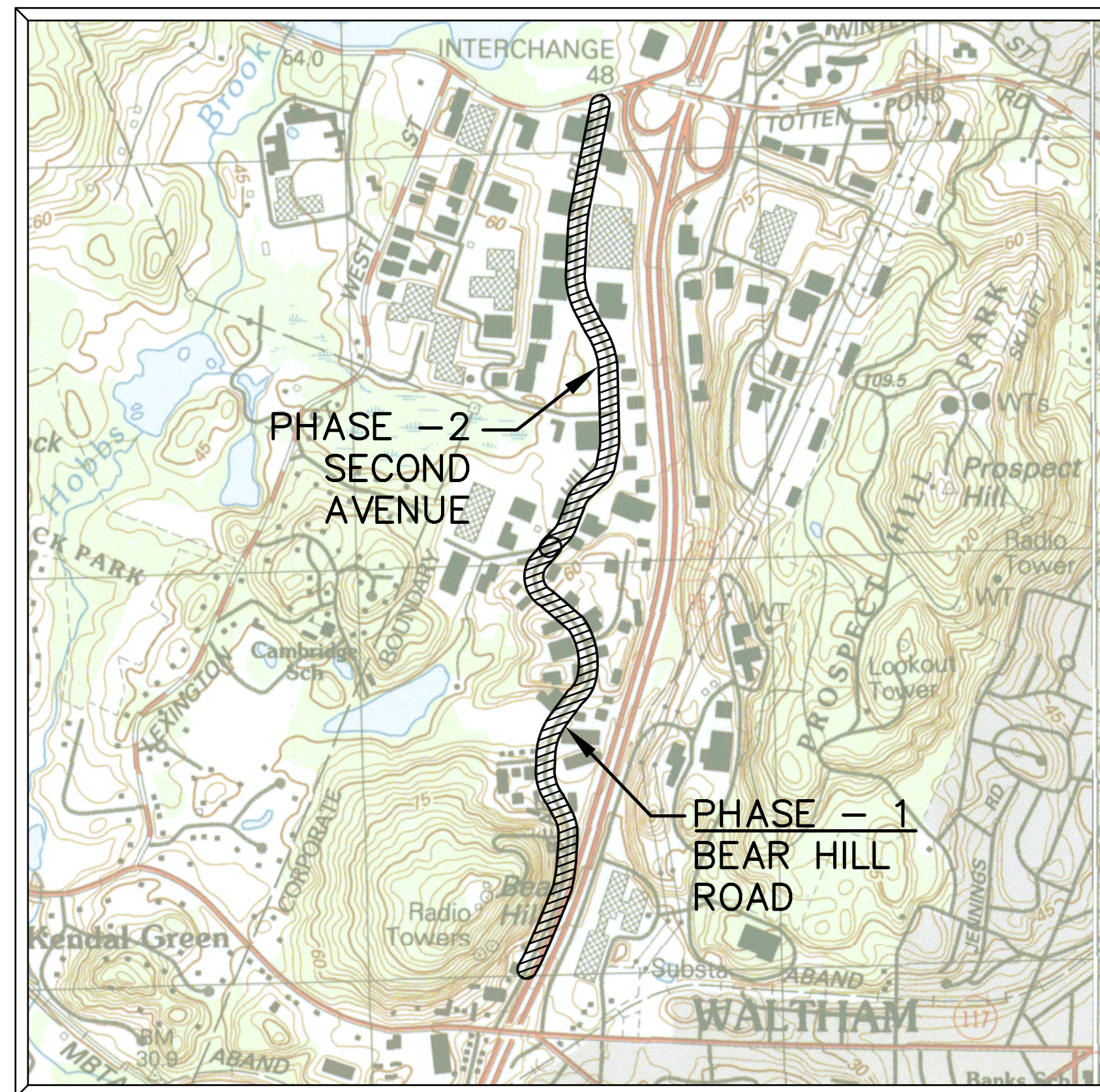
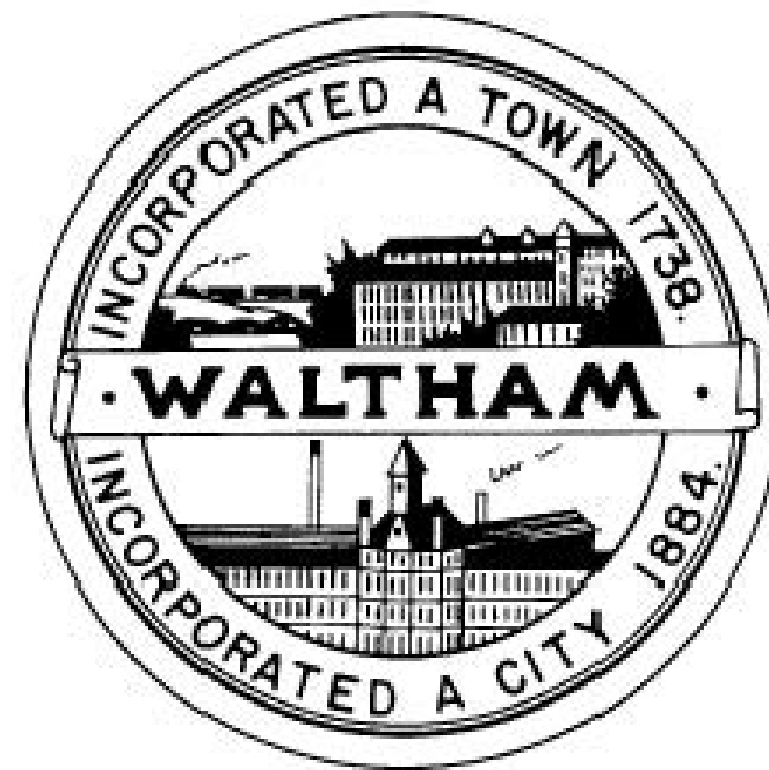
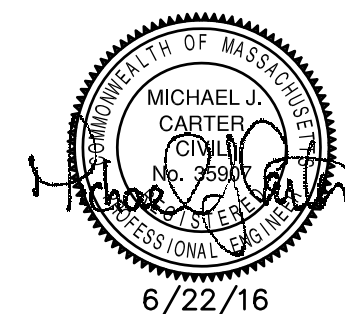


IMAGE OBTAINED FROM: "OFFICE OF GEOGRAPHIC AND ENVIRONMENTAL INFORMATION (MASSGIS), COMMONWEALTH OF MASSACHUSETTS"

LOCUS PLAN
SCALE : 1" = 1,000'±



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BID SET

ABBREVIATIONS

ACP	ASBESTOS CEMENT PIPE
BND	BOUND
BLDG	BUILDING
BIT CONC	BITUMINOUS CONCRETE
BM	BENCH MARK
BOL	BOLLARD
BRK	BRICK
CB	CATCH BASIN
CB/DH	CONCRETE BOUND/DRILL HOLE
CLF	CHAIN LINK FENCE
CS	COMBINED SEWER
C	CONDUIT
CL	CENTERLINE
CI	CAST IRON
CMP	CORRUGATED METAL PIPE
CP	CORRUGATED PLASTIC
CSMH	COMBINED SEWER MANHOLE
CONC	CONCRETE
CLDI	CEMENT LINED DUCTILE IRON
CLF	CHAIN LINK FENCE
DI	DUCTILE IRON PIPE
DRV	DRIVE
DMH	DRAIN MANHOLE
EMH	ELECTRIC MANHOLE
EX	EXISTING
EXIST	EXISTING
FAB	FIRE ALARM BOX
FND	FOUND
EOP	EDGE OF PAVEMENT
EOR	EDGE OF GRAVEL ROAD
FDMH	FIRE DEPT MANHOLE
GG	GAS GATE
GS	GAS SERVICE
GIP	GALVANIZED IRON PIPE
GD	GROUND
HW	HEADWALL
HSE	HOUSE
HOR	HORIZONTAL
HYD	HYDRANT
HP	HIGH PRESSURE
INV	INVERT
LOC	LOCATION
LP	LIGHT POLE
MB	MAIL BOX
MH	MANHOLE
MHB	MASSACHUSETTS HIGHWAY BOUND
MIN	MINIMUM
N/F	NOW OR FORMERLY
NG	NATURAL GAS
NTS	NOT TO SCALE
OHW	OVERHEAD WIRE
PE	POLYETHYLENE PIPE
PM	PAVEMENT MARKING
PROP	PROPOSED
P	APPROXIMATE PROPERTY LINE
R	RIM
RCP	REINFORCED CONCRETE PIPE
REC	RECORD
RET WALL	RETAINING WALL
ROW	APPROXIMATE RIGHT OF WAY
RR	RAILROAD
SB	STONE BOUND
S	SIGN
SMH	SEWER MANHOLE
STA	STATION
S	SEWER
SS	SEWER SERVICE
SVC	SERVICE
SW	SIDEWALK
TMH	TELEPHONE MANHOLE
TP	TEST PIT
TR	TREE
TS&G	TAPPING SLEEVE & GATE
TYP	TYPICAL
UNK	UNKNOWN
UP	UTILITY POLE
VC	VITRIFIED CLAY
VERT	VERTICAL
W	WATER MAIN
W/	WITH
WG	WATER GATE
WIP	WROUGHT IRON PIPE
WMH	WATER MANHOLE
WS	WATER SERVICE
WSO	WATER SERVICE SHUTOFF
WV	WATER VALVE

EXISTING LEGEND

	EX. CATCH BASIN
	EX. DRAIN MANHOLE
	EX. SEWER MANHOLE
	EX. HYDRANT
	EX. WATER GATE VALVE
	EX. GAS GATE VALVE
	EX. LIGHT POST
	EX. SIGN
	BUILDING (APPROX. LOCATION)
	EXISTING TREE W/ TRUNK DIAMETER
	APPROX. LOT LINE
	EXISTING WOODEN GUARD RAIL
	EXISTING LIMIT OF WETLANDS/ WETLANDS FLAG NUMBER
	EXISTING 5' CONTOURS
	EXISTING 1' CONTOURS
	EX. DRAIN LINE
	EX. SEWER LINE
	EX. WATER LINE
	EX. ELECTRIC LINE
	EX. OVERHEAD WIRE
	EX. GAS LINE

PROPOSED LEGEND

	NEW WATER HYDRANT
	NEW WATER GATE VALVE
	NEW WATER SHUT OFF
	NEW WATER PIPE
	TEMPORARY WATER PIPE BYPASS

GENERAL NOTES

- PLAN AND TOPOGRAPHIC INFORMATION ARE PREPARED FROM AN ON-THE-GROUND INSTRUMENT SURVEY PERFORMED BY GCG ASSOCIATES, INC. IN MARCH AND APRIL 2016 AND WALTHAM GIS.
- ELEVATIONS, IN FEET, REFER TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88) AS DEFINED BY MASSACHUSETTS GEODETIC SURVEY.
- BUILDING LOCATIONS AS SHOWN ON ADJACENT PROPERTIES, ARE APPROXIMATE AND FOR REFERENCE PURPOSES ONLY.
- PRIOR TO THE PROPOSED CONSTRUCTION, THE CONTRACTOR SHALL PROVIDE THE ENGINEER AND CITY WITH A CONSTRUCTION SCHEDULE DELINEATING THE SEQUENCE OF WORK, A TRAFFIC MANAGEMENT PLAN AND ESTIMATED TIME OF COMPLETION FOR EACH SEGMENT OF WORK.
- THE TRAFFIC MANAGEMENT PLAN, TO BE PROVIDED BY THE CONTRACTOR, SHALL BE SUBMITTED FOR CITY REVIEW AND SHALL BE IN COMPLIANCE WITH MASSDOT AND MUTCD. SAID PLAN WILL SHOW HOW TRAFFIC FLOW WILL BE HANDLED DURING CONSTRUCTION.
- THE CONTRACTOR SHALL MAINTAIN CONTINUOUS TRAFFIC FLOW DURING CONSTRUCTION SATISFACTORY TO THE ENGINEER AND THE CITY OF WALTHAM.
- ACCESS TO ALL EXISTING PARKING LOTS AND BUILDINGS SHALL BE MAINTAINED AT ALL TIMES DURING THE COURSE OF CONSTRUCTION BY THE CONTRACTOR.
- ALL CONSTRUCTION SIGNING SHALL CONFORM TO THE REQUIREMENTS OF THE STATE OF MASSACHUSETTS DEPARTMENT OF TRANSPORTATION (MASSDOT) AND THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).
- THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES AND PROCEDURES, AND FOR SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH ALL WORK INCLUDED UNDER THIS CONTRACT. THE DRAWINGS DO NOT INCLUDE NECESSARY COMPONENTS FOR CONSTRUCTION SAFETY. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR PROVIDING AND MAINTAINING ALL SAFETY BARRIERS, WARNING FLASHERS AND THE LIKE, AS REQUIRED BY THE CONDUCT OF THE WORK FOR THE PROTECTION OF WORKERS AND NON-WORKERS ALIKE. THE CONTRACTORS ATTENTION IS DIRECTED TO OSHA REQUIREMENTS.
- TRENCH DEWATERING COSTS THROUGHOUT THE DURATION OF THE PROPOSED PROJECT SHALL BE INCLUDED IN THE APPLICABLE BID. TRENCH DEWATERING PLAN SHALL BE SUBMITTED TO THE CITY ENGINEER FOR APPROVAL.
- ALL CONSTRUCTION MATERIAL, DEBRIS, ASPHALT, SOIL, ETC. THAT IS REMOVED FROM THE SITE SHALL BE HANDLED AND DISPOSED OF IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL REGULATIONS.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SITE RESTORATION AND CLEAN UP UPON COMPLETION OF THE PROJECT. DURING THE COURSE OF CONSTRUCTION, ANY DAMAGE BY THE CONTRACTOR TO FENCES, GUARDRAILS, PATHS, STAIRS, PAVEMENT, LANDSCAPING OR VEGETATION SHALL BE REPAIRED OR REPLACED AND RESTORED TO ORIGINAL CONDITION AT NO ADDITIONAL COST TO THE CONTRACT. ANY REPLACEMENT FENCE AND/OR HANDRAILS SHALL MATCH EXISTING.
- ALL CASTINGS, GATE BOXES, HYDRANTS, LIGHT POLES, ETC. DAMAGED DURING RECONSTRUCTION SHALL BE SUPPLIED AND REPLACED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE CONTRACT.
- THE CONTRACTOR SHALL PAVE AND REPAIR ALL CURBING, SIDEWALKS, WALKWAYS, DRIVEWAYS, AND ROADS DISTURBED, DAMAGED OR REMOVED DURING CONSTRUCTION. ITEMS SHALL BE REPLACED WITH THE SAME TYPE OF MATERIAL ONCE THE WORK IS COMPLETED.
- THE CONTRACTOR SHALL REMOVE AND REPLACE OR SUPPORT UTILITY POLES WITHIN 10 FEET OF THE PROPOSED UTILITY PIPE CENTERLINE OR AS DIRECTED BY THE ENGINEER.
- POLICE DETAILS SHALL BE COORDINATED BY THE CONTRACTOR.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR PREVENTING ANY DEBRIS, SEDIMENT OR SILTY WATER FROM ENTERING ANY DRAINAGE SYSTEM, ETC. DURING ALL PHASES OF CONSTRUCTION. THE CONTRACTOR WILL INSTALL ALL TEMPORARY CATCH BASIN SILT SACKS AS REQUIRED DURING CONSTRUCTION. INCLUDE FOR PAYMENT UNDER MISCELLANEOUS ITEM 5B.
- CONSTRUCTION HOURS: CONSTRUCTION OF WATER MAIN SHALL OCCUR BETWEEN THE HOURS OF 9:00 A.M. AND 4:00 P.M. NIGHT WORK MAY BE SCHEDULED AT THE DISCRETION OF THE CITY OF WALTHAM BETWEEN THE HOURS OF 8:00 P.M. AND 5:00 A.M.

EXISTING WATER FACILITIES

- ALL EXISTING VALVES AND HYDRANTS REMOVED FROM THE WORK SHALL BE DELIVERED TO THE WALTHAM DPW YARD BY THE CONTRACTOR OR DISPOSED OF BY THE CONTRACTOR AS DETERMINED BY THE ENGINEER IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS.
- ALL EXISTING VALVE BOXES, FRAMES AND COVERS REMOVED FROM THE WORK SHALL BE DELIVERED TO THE WALTHAM DPW GARAGE BY THE CONTRACTOR OR DISPOSED OF BY THE CONTRACTOR AS DETERMINED BY THE ENGINEER.
- ALL EXISTING WATER PIPE REMOVED SHALL BE DISPOSED OF BY THE CONTRACTOR.
- EXISTING WATER SERVICE RECONNECTION SHALL BE DONE AFTER THE PROPOSED MAIN AND SERVICE STUBS HAVE BEEN ACTIVATED (TESTING, DISINFECTION AND FLUSHING COMPLETED).
- THE CITY OF WALTHAM SHALL OPERATE ALL WATER VALVES. TO FACILITATE WORK IN THIS CONTRACT IT IS UNDERSTOOD THAT NUMEROUS VALVES WILL NEED TO BE OPERATED. PRIOR TO OPERATING ANY VALVE THE CONTRACTOR SHALL NOTIFY THE WALTHAM WATER DEPARTMENT AND SHALL HAVE THE ENGINEER PRESENT.
- THE EXISTING WATER MAINS ON MAIN STREET, BEAR HILL ROAD, FOX ROAD, HICKORY DRIVE, SECOND AVENUE AND WINTER STREET IS ASSUMED TO BE CAST IRON OR DUCTILE IRON CONSTRUCTION AS NOTED.

TEMPORARY BYPASS PIPING NOTES

- PRIOR TO STARTING ANY WORK THAT WILL AFFECT SERVICE TO CUSTOMERS, THE CONTRACTOR SHALL NOTIFY THE CITY, THE ENGINEER AND THE CUSTOMERS 72 HOURS PRIOR TO SHUTDOWN. NOTICE INFORMATION SHALL, AT A MINIMUM, INCLUDE THE DATES AND HOURS OF SHUTDOWN AND NOTE THAT A TEMPORARY RUSTY WATER CONDITION MAY EXIST.
- FINAL TEMPORARY BYPASS PIPING PLAN SHALL BE DESIGNED BY THE CONTRACTOR, INCLUDING LAYOUT OF THE BYPASS PIPING, TEMPORARY SERVICE LINES TO ALL CUSTOMERS, THE SPECIFIED BYPASS PIPE DIAMETER TO BE USED IN EACH LOCATION, AND THE TYPE AND LOCATION OF TEMPORARY FIRE HYDRANTS. THE BYPASS PIPING, SHALL BE 2", 4", 6" AND 8" AS REQUIRED. PAYMENT FOR FURNISHING, INSTALLING, AND MAINTAINING AND REMOVING BYPASS PIPING WILL BE PAID FOR UNDER TEMPORARY BYPASS PIPING ITEMS.
- THREE COPIES OF PROPOSED PLANS FOR THE DESIGN OF THE TEMPORARY WATER BYPASS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL AT THE PRE-CONSTRUCTION MEETING. THE ENGINEER SHALL MAKE THE FINAL DECISION AS TO THE ROUTING AND SIZES OF ALL BYPASS LINES, BEFORE ANY BYPASS IS INSTALLED.
- THE WORK SHALL BE SCHEDULED IN SECTIONS, AS APPROVED BY THE CITY ENGINEERING DEPARTMENT AND THE ENGINEER, AS IT IS NECESSARY TO ALLOW FOR COMPLETION OF THE WORK AND RESTORATION OF SERVICE TO THE CUSTOMER WITHIN THE SPECIFIED TIME PERIOD.
- AT ALL ROADWAY CROSSING, CURB CUT DRIVEWAY LOCATIONS AND ENTRANCES TO PARKING AREAS, THE TEMPORARY BYPASS WATER PIPING SHALL BE PLACED BELOW PAVING GRADE AND COVERED PER DETAIL PROVIDED ON PLAN DETAIL SHEETS. THE BYPASS PIPING MAY BE LAID ABOVE GROUND IN UNPAVED LOCATIONS WHICH DO NOT SUSTAIN VEHICLE TRAFFIC.
- THE TEMPORARY BYPASS PIPING SHALL BE INSTALLED, TESTED AND APPROVED PRIOR TO THE REMOVAL OF THE EXISTING WATER MAIN AND THE INSTALLATION OF THE PROPOSED WATER MAIN.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING ALL AFFECTED WATER CUSTOMERS, IN WRITING, OF SHUTTING OFF SERVICE AT LEAST 72 HOURS PRIOR TO SHUTDOWN. NOTICE CARDS WILL BE FURNISHED BY THE CONTRACTOR WHICH WILL INCLUDE THE HOURS OF SHUTDOWN AND NOTE THAT A TEMPORARY RUSTY WATER CONDITION MAY EXIST. NOTICE CARDS WILL ALSO HAVE SPACE FOR THE CONTRACTOR TO FILL IN THE SPECIFIC DATES FOR EACH SHUTDOWN. THE WORK SHALL BE SCHEDULED IN SECTIONS, AS APPROVED BY THE ENGINEER, AS IT IS NECESSARY TO ALLOW FOR COMPLETION OF THE WORK AND RESTORATION OF SERVICE TO THE CUSTOMER WITHIN THE TIMES SPECIFIED BY THE ENGINEER.
- CONTRACTOR SHALL PLACE AND MAINTAIN ALL BARRELS, CONES AND SAFETY DEVICES TO PROTECT THE BYPASS.

PROPOSED WATER SYSTEM

- WATER MAINS SHALL BE CLDI CLASS 56 - DOUBLE CEMENT LINED.
- RESTRAINING GASKETS: FIELD LOK 350 GASKET, PUSH ON JOINT RESTRAINTS SHALL BE USED FOR ALL INSTALLED PIPING.
- ALL WATER MAIN FITTINGS AND VALVES SHALL BE DUCTILE IRON MECHANICAL JOINT AND RESTRAINED WITH MJ RESTRAINTS (MEGALUG OR EQUAL).
- ALL WATER SERVICES GATE VALVE BOXES AND CURB STOPS SHALL BE REPLACED UP TO THE RIGHT OF WAY, AT BACK OF SIDEWALK, OR AS DIRECTED BY THE ENGINEER.
- ALL NEW WATER SERVICES, CORPORATIONS AND CURB STOPS SHALL BE SIZE AS SHOWN ON PLAN UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
- ALL WATER SERVICE PIPING LESS THAN 4" IN DIAMETER SHALL BE TYPE K COPPER. SERVICES 4" AND GREATER IN DIAMETER SHALL BE CLASS 56 CLDI.
- ALL NEW CORPORATIONS AND CURB STOPS SHALL BE LEAD FREE AND BALL TYPE WITH INSERTS AND RESTRAINTS.
- ALL WORK RELATED TO THRUST BLOCKS SHALL BE PAID FOR UNDER THE CONCRETE ITEM.
- LOCATION OF PROPOSED WATER SYSTEM MAY BE ALTERED IN THE FIELD BY THE ENGINEER TO SUIT FIELD CONDITIONS.
- ALL HYDRANTS SHALL BE "AMERICAN-DARLING B-62" YELLOW AND BLACK "WALTHAM COLORS."
- NEW AND REPLACED HYDRANTS SHALL BE LOCATED AT THE BACK OF SIDEWALK.
- HYDRANT MARKERS SHALL BE INSTALLED AT EACH HYDRANT LOCATION.

TRENCH PAVING NOTES

- ALL TRENCHES SHALL BE PAVED WITH 3" TEMPORARY PAVEMENT AT THE END OF EACH WORK DAY (TRENCHES MAY NOT BE COVERED WITH STEEL PLATES OVERNIGHT).
- THE CONTRACTOR SHALL INSTALL A MINIMUM 5" PERMANENT BITUMINOUS CONCRETE TRENCH PAVEMENT AS DIRECTED. SEE DETAIL SHEETS.
- ALL TEMPORARY AND PERMANENT TRENCHES IN EXISTING PAVEMENT ARE TO BE SAW CUT WHERE THE PROPOSED PAVEMENT SHALL MEET TO ALLOW A SMOOTH TRANSITION AFTER PAVING. NO OTHER METHOD OF CUTTING IS ACCEPTABLE. ALL JOINTS SHALL BE SANDED AND SEALED.
- ALL TRENCHES WILL BE PUDDLED OR JETTED WITH WATER TO ALLOW PROPER SETTLEMENT. TRENCHES THAT CANNOT BE JETTED WILL BE MECHANICALLY COMPACTED AS DETERMINED BY THE ENGINEER. ALL TRENCHES WILL BE COMPACTED TO 95% COMPACTION.
- AFTER THE JETTING PROCESS IS COMPLETED, THE CONTRACTOR SHALL PLACE TRENCH PAVEMENT AS SHOWN ON THE DETAILS ON DETAIL SHEETS.
- WATER USED FOR JETTING OR PUDDLING OF TRENCHES SHALL BE METERED BY THE WATER DEPARTMENT. THE WATER DEPARTMENT SHALL SETUP AND REMOVE THE METER ON A DAILY BASIS. THERE WILL BE NO ADDITIONAL CHARGE FOR THE METER OR THE WATER USED.
- THE CONTRACTOR WILL REMOVE AND REPLACE ALL PAVEMENT DAMAGED DURING THE INSTALLATION OF THE PROPOSED UTILITY.
- THE CONTRACTOR SHALL TEMPORARILY AND PERMANENTLY RESTRIPE EXISTING PAVEMENT MARKINGS AS NECESSARY.
- DAILY STREET SWEEPING REQUIRED BY CONTRACTOR. TO BE INCLUDED FOR PAYMENT UNDER LUMP SUM MISCELLANEOUS WORK AND CLEANUP BID ITEMS.

UTILITY MARKING AND LOCATION NOTES:

- BEFORE CONSTRUCTION, ALL UTILITIES, PUBLIC AND PRIVATE MUST BE NOTIFIED (SEE MASSACHUSETTS GENERAL LAWS, CHAPTER 82 SECTION 40.) CALL "DIG SAFE" - 811, OR CUSTOMER SERVICE - 1 (888) 344-7233 HTTP://WWW.DIGSAFE.COM
- UTILITY CONTACTS:
THE CITY OF WALTHAM - WATER/SEWER/DRAIN:
 ERIC JEWETT, WATER & SEWER FOREMAN (7AM-3PM): 781-314-3826
 DAYTIME OFFICE (7AM-3PM): 781-314-3820
 AFTERHOURS EMERGENCY (AFTER 3PM): 781-893-3700
THE CITY OF WALTHAM - WIRES:
 TIM KELLEY, INSPECTOR OF WIRES: 781-389-6044
 MAIN OFFICE: 781-314-4186
VERIZON - TELEPHONE:
 FREDERICK WAGNER, AREA PROJECT COORDINATOR: 781-376-5067
COMCAST - CABLE:
 MANUEL FURTADO, AREA PROJECT COORDINATOR: 774-644-9104
NATIONAL GRID - GAS:
 KEITH WALTERS, AREA PROJECT COORDINATOR: 516-924-4602
EVERSOURCE - ELECTRIC:
 N.E. SERVICE NUMBER: 1-800-592-2000
- UTILITY PLAN REFERENCES:
NATIONAL GRID - GAS:
 (WAL2608, WAL2637, WAL2652, WAL2712 AND PAVEMENT MARKINGS)
NATIONAL GRID (EVERSOURCE) - ELECTRIC:
 (EVERSOURCE T-PLAN FOR BEAR HILL RD, WALTHAM PARTS 1, 2 & 3 - DATED APRIL 13, 2016 AND EVERSOURCE T-PLAN FOR 2ND AVE, WALTHAM PARTS 4 & 5 - DATED APRIL 13, 2016)
 *UNDERGROUND CONNECTION BETWEEN ELECTRIC MANHOLES NOT PROVIDED BY EVERSOURCE
VERIZON N.E. - TELEPHONE:
 EXCHANGE: TWINBROOK EXCHANGE CODE: 6223-1 (4 SHEETS)
COMCAST - CABLE:
 AREA MAPS DATED 4/15/16 COMCAST NORTHERN DIVISION DESIGN CENTER, 2 SHEETS
WALTHAM ENGINEERING - WATER:
 (BEAR HILL ROAD WATER & SEWER SHEETS A THROUGH E - DATED 1975, SECOND AVE. WATER & SEWER SHEETS A THROUGH D, VARIOUS WATER SERVICE TIE CARDS, BUILDING PLANS AND PAVEMENT MARKINGS)
WALTHAM ENGINEERING - SEWER:
 (BEAR HILL ROAD WATER & SEWER SHEETS A THROUGH E - DATED 1975, SECOND AVE. WATER & SEWER SHEETS A THROUGH D, VARIOUS SEWER SERVICE TIE CARDS, BUILDING PLANS AND PAVEMENT MARKINGS)
WALTHAM ENGINEERING - DRAINAGE:
 (BEAR HILL ROAD DRAIN SHEETS C THROUGH E, SECOND AVE. WATER & SEWER SHEETS A THROUGH D, VARIOUS BUILDING PLANS AND PAVEMENT MARKINGS)
 SUBSURFACE UTILITY LINES, AS SHOWN HEREON, WERE COMPILED ACCORDING TO AVAILABLE RECORD INFORMATION FROM THE REFERENCED UTILITY COMPANIES AND THE CITY OF WALTHAM. THE LOCATIONS ARE APPROXIMATE ONLY. ACTUAL LOCATIONS MUST BE DETERMINED IN THE FIELD. GCG ASSUMES NO RESPONSIBILITY FOR DAMAGES INCURRED AS A RESULT OF UTILITIES OMITTED OR INACCURATELY SHOWN. THE CONTRACTOR SHALL EXCAVATE TEST PITS TO VERIFY UTILITY LINE LOCATIONS AS NECESSARY.
- WATER MAINS ARE ASSUMED TO BE 5 FEET BELOW THE EXISTING GROUND SURFACE OR AS NOTED ON PLANS. GAS LINES ARE ASSUMED TO BE 3 FEET BELOW THE EXISTING GROUND SURFACE. TELEPHONE AND ELECTRIC CONDUIT ARE ASSUMED TO BE 2 FEET BELOW THE EXISTING GROUND SURFACE.
- THE CONTRACTOR SHALL VERIFY THE LOCATION OF EXISTING UTILITY SERVICES AS SHOWN ON THE PLAN AND BE RESPONSIBLE FOR LOCATING ANY ADDITIONAL SERVICES NOT SHOWN.
- THE CONTRACTOR SHALL ACCURATELY LOCATE THE EXISTING WATER PIPES CONNECTED TO EACH BUILDING THAT HAVE NOT PREVIOUSLY BEEN MARKED OUT WITHIN THE LIMITS OF WORK PRIOR TO CONSTRUCTION. THIS WORK SHALL BE INCLUDED IN THE MISCELLANEOUS ITEMS PRICE.
- THE CONTRACTOR SHALL EXCAVATE TEST PITS TO VERIFY UTILITY LINE LOCATIONS AND DETERMINE ACTUAL FIELD CONDITIONS AS NECESSARY OR AS DIRECTED BY THE ENGINEER. THE CONTRACTOR SHALL PLAN AND PERFORM TEST PIT EXCAVATION WELL IN ADVANCE OF COMMENCING CONSTRUCTION IN THE GENERAL AREA TO ALLOW TIME TO REVIEW ACTUAL CONDITIONS ENCOUNTERED. TEST PITS NOT SPECIFICALLY IDENTIFIED SHALL BE EXCAVATED BY THE CONTRACTOR AT THE DIRECTION OF THE ENGINEER. PAYMENT INCLUDED UNDER ITEM 2A.
- EXISTING UTILITIES INTERFERING WITH THE WORK SHALL BE RELOCATED OR BRACED AND SUPPORTED AS DIRECTED IN THE FIELD BY THE ENGINEER, UNLESS OTHERWISE INDICATED OR SPECIFIED. THE CONTRACTOR SHALL BE PAID FOR WORK REQUIRED TO SUPPORT OR REMOVE AND REPLACE EXISTING STRUCTURES AND UTILITY LINES ADJACENT TO OR WITHIN THE LIMITS OF TRENCH EXCAVATION UNDER THE MISCELLANEOUS WORK ITEM.
- DAMAGE TO ANY UTILITY WILL BE REPAIRED BY THE CONTRACTOR, AT THE CONTRACTOR'S EXPENSE, IN A TIMELY MANNER SO THAT DISRUPTION OF SERVICE TO ANY UTILITY WILL NOT BE LONGER THAN PRACTICALLY NECESSARY TO REPAIR THE DAMAGE.

STOCKPILED MATERIALS AND EQUIPMENT

- THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING A LOCATION FOR STAGING AND STORING STOCKPILED MATERIALS.
- THE CONTRACTOR IS RESPONSIBLE FOR COORDINATION OF LOCATION AND ANY PRIVATE AGREEMENTS AND ALL FEES THAT MAY BE ASSOCIATED WITH THE USE OF AN AREA FOR STORING STOCKPILED MATERIALS.
- THE CITY OF WALTHAM IS NOT RESPONSIBLE FOR PROVIDING A LOCATION FOR STAGING OR THE STORAGE OF STOCKPILED MATERIALS.
- MATERIALS SHALL NOT BE STOCKPILED ON THE ROAD OR IN PUBLIC PARKING AREAS.
- NO EQUIPMENT SHALL BE ALLOWED TO BE PARKED ON THE ROAD WHEN NOT IN USE.
- STOCKPILED SUITABLE EXCAVATED MATERIAL (EXCAVATED UNDER ITEM 2A) SHALL BE USED ONSITE FOR SUITABLE TRENCH GRAVEL BACKFILL AND OTHER AREAS REQUIRING SUITABLE GRAVEL. NO ADDITIONAL PAYMENT SHALL BE MADE FOR THE PLACEMENT OF THIS MATERIAL.
- ALL SURPLUS EXCAVATED MATERIALS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO DISPOSE OF OFFSITE IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS.

LEGEND & CONSTRUCTION NOTES

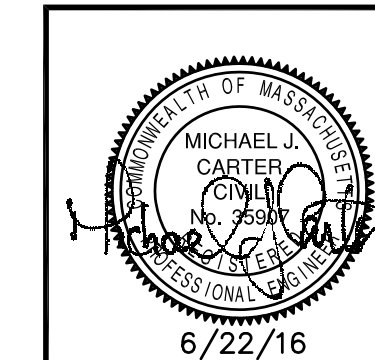
**CITY OF WALTHAM, MASSACHUSETTS
 BEAR HILL ROAD & SECOND AVENUE
 WATER MAIN REPLACEMENT PROJECT**

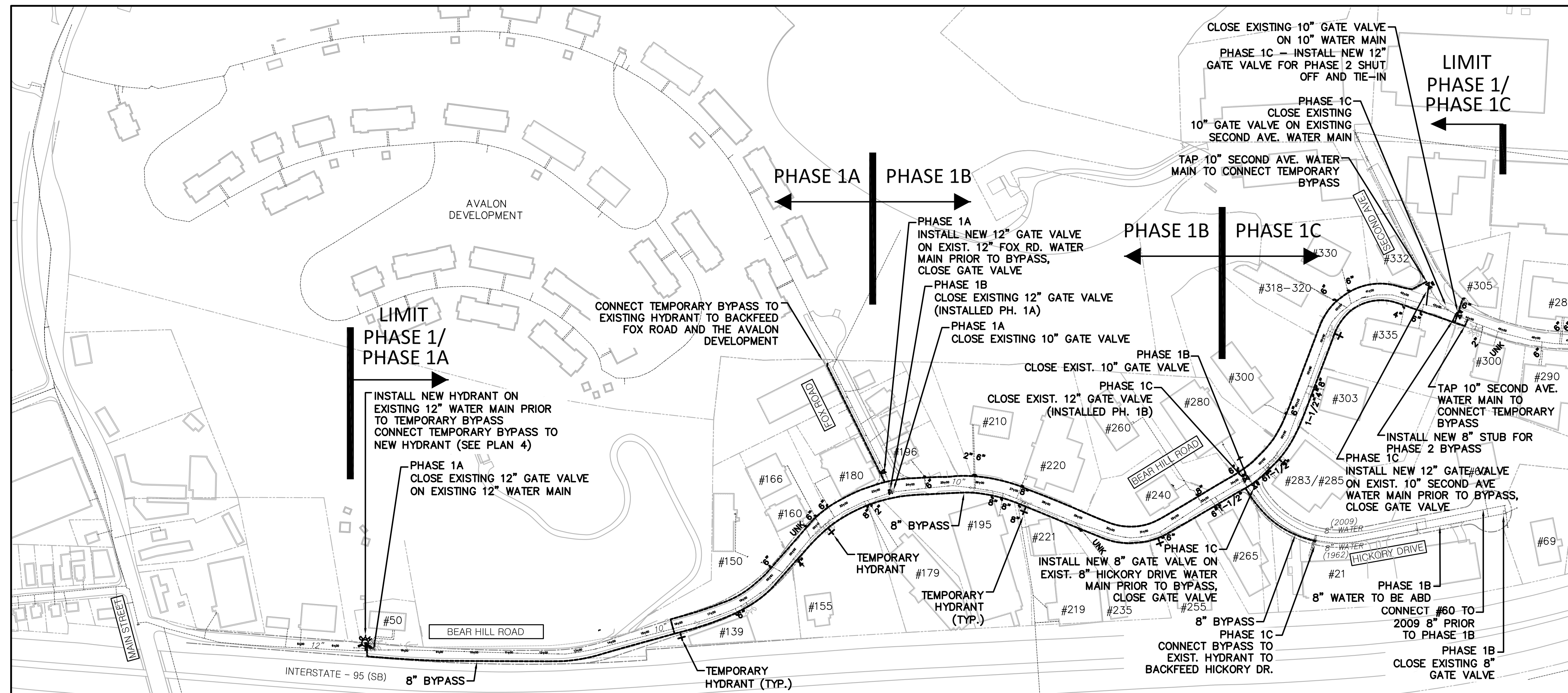
GCG ASSOCIATES, INC.

WILMINGTON MASSACHUSETTS

SCALE: AS NOTED DATE: JUNE 22, 2016

JOB NO. / FILE NAME: 1604-COVER_DETAILS	DESIGNED BY: S.B.H. DRAWN BY: S.B.H. CHECKED BY: M.J.C.	PLAN NO. 2 OF 17
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WATER MAIN BYPASS PLAN - PHASE 1
SCALE: 1"=200'

GENERAL NOTES:

1. ALL TEMPORARY BYPASS MAINLINES SHALL BE A MINIMUM OF 8" IN DIAMETER.
2. BYPASS MAIN LINES MAY BE INSTALLED AT A MAX. LENGTH OF 4000 FEET IN PHASE 1 OR 2.
3. BYPASS MAIN LINES SHALL HAVE A SHUTOFF VALVE PLACED AT A MAX. DISTANCE OF 500 FEET.
4. BYPASS MAIN LINES SHALL HAVE A SHUTOFF VALVE PLACED AT A MAX. DISTANCE OF 500 FEET.
5. SERVICE CONNECTION TEES SHALL BE PLACED ALONG TEMPORARY BYPASS MAINLINE AS IT IS INSTALLED. TEMPORARY SERVICE LINES 3" OR LESS IN DIAMETER MAY BE TAPPED INTO TEMPORARY BYPASS MAINLINE.
6. PERMANENT BITUMINOUS TRENCH PAVEMENT AND RESTORATIVE REPAIRS SHALL BE COMPLETED AT THE END OF EACH SUB-PHASE AND PHASE.
7. TEMPORARY SERVICE CONNECTIONS SHALL BE CONNECTED AT THE RIGHT-OF-WAY BY EXCAVATING TO SERVICE(S) AND CONNECTING TO EXISTING PIPE. ALL FITTINGS, MATERIAL AND LABOR SHALL BE INCLUDED UNDER THE APPROPRIATE ITEM.
8. THE FOLLOWING SUBPHASING SHALL BE FOLLOWED TO MINIMIZE THE LENGTH OF TIME A WATER USER IS CONNECTED TO THE BYPASS SYSTEM.

PHASE 1 - SUMMER/FALL 2016 - #50 BEAR HILL ROAD TO SECOND AVENUE

INSTALL WATER BYPASS MAIN LINES (APPROX. STA. 6+85 TO 44+00)

1. INSTALL NEW HYDRANT AT #50 BEAR HILL ROAD.
2. TAP 10" MAIN LINE WATER ON SECOND AVENUE TO FEED WATER MAIN BYPASS. WATER MAIN BYPASS PLACED ON EACH SIDE OF BEAR HILL ROAD WITH LOOPED CONNECTION TO NEW HYDRANT AT #50 BEAR HILL ROAD.
3. DISINFECT AND TEST WATER MAIN BYPASS SYSTEM.

PHASE 1A - #50 BEAR HILL ROAD TO FOX ROAD (APPROX. STA. 6+85 TO 23+40)

1. CONNECT TEMPORARY BYPASS WATER TO HYDRANT ON FOX ROAD. CONNECTION TO BACK FEED FOX ROAD AND MAINTAIN WATER MAIN LOOP THROUGH AVALON DEVELOPMENT TO MAIN STREET.
2. CONNECT BUILDINGS #139, #155, #179, #150, #160, #166 & #180 TO TEMPORARY WATER BYPASS.
3. INSTALL (CUT IN) NEW 12" GATE VALVE ON FOX RUN ROAD. LEAVE VALVE CLOSED.
4. CLOSE EXISTING 12" MAIN LINE GATE VALVE AT #50 BEAR HILL ROAD APPROX. STA. 7+10.
5. CLOSE EXISTING 10" MAIN LINE GATE VALVE ON BEAR HILL ROAD APPROX. STA. 23+45.
3. INSTALL WATER SYSTEMS, AS SPECIFIED, FROM APPROX. STA. 6+50 TO 23+40.
4. TEST AND DISINFECT NEW WATER SYSTEMS.
5. CONNECT AND ACTIVATE BUILDING SERVICES.

PHASE 1B - FOX ROAD TO HICKORY DRIVE (APPROX. STA. 23+40 TO 34+30)

1. CONNECT 6" WATER SERVICE AT #60 HICKORY DRIVE TO 8" WATER MAIN INSTALLED IN 2009 PRIOR TO BYPASS PHASE 1B SERVICES BEING ACTIVATED.
2. CONNECT BUILDINGS #196, #195, #210, #220, #221, #235, #255, #240, #265, #280 TO TEMPORARY WATER BYPASS.
3. CLOSE NEW 12" GATE VALVE (INSTALLED PH. 1A) ON BEAR HILL ROAD APPROX. STA. 23+40.
4. CLOSE EXISTING 10" MAIN LINE GATE VALVE ON BEAR HILL ROAD APPROX. STA. 34+35.
5. CLOSE EXISTING 8" GATE VALVE AT END OF HICKORY DRIVE 1962 WATER MAIN, LINE TO BE ABD.
6. INSTALL WATER SYSTEMS, AS SPECIFIED, FROM APPROX. STA. 23+40 TO 34+30.
7. TEST AND DISINFECT NEW WATER SYSTEMS.
8. CONNECT AND ACTIVATE BUILDING SERVICES.

PHASE 1C - HICKORY DRIVE TO SECOND AVE (APPROX. STA. 34+30 TO 43+70)

1. INSTALL (CUT IN) NEW 12" GATE VALVE ON SECOND AVENUE AT #332.
2. INSTALL (CUT IN) NEW 8" GATE VALVE ON HICKORY DRIVE.
3. CONNECT BUILDINGS #283/285, #300, #303, #318/320, #330, #335 & #305 (SECOND AVE.) TO TEMPORARY WATER BYPASS.
4. CLOSE NEW 12" GATE VALVE (INSTALLED PHASE 1B) ON BEAR HILL ROAD APPROX. STA. 34+30.
5. CLOSE NEW 8" GATE VALVE ON HICKORY DRIVE WATER MAIN.
6. CLOSE NEW 12" GATE VALVE ON SECOND AVENUE AT #332.
7. CLOSE EXISTING 10" GATE VALVE ON SECOND AVENUE APPROX. STA. 43+75.
8. INSTALL WATER SYSTEMS, AS SPECIFIED, FROM APPROX. STA. 34+30 TO 43+70.
9. TEST AND DISINFECT NEW WATER SYSTEMS.
10. CONNECT AND ACTIVATE BUILDING SERVICES.

PHASE 2 - SPRING 2017 - SECOND AVE FROM BEAR HILL ROAD TO WINTER STREET

INSTALL WATER BYPASS MAIN LINES (APPROX. STA. 43+70 TO 90+60)

1. TAP 10" WATER MAIN LINE ON WINTER STREET TO FEED WATER MAIN BYPASS. WATER MAIN BYPASS PLACED ON EACH SIDE OF SECOND AVENUE WITH LOOPED CONNECTION TO 8" STUB (INSTALLED PHASE 1C) AT SECOND AVENUE INTERSECTION WITH BEAR HILL ROAD.
2. DISINFECT AND TEST WATER MAIN BYPASS SYSTEM.

PHASE 2A - SECOND AVE (APPROX. STA. 43+70 TO 53+65)

1. CONNECT BUILDINGS #300, #290, #289, #266, #256, #244 TO TEMPORARY WATER BYPASS.
2. CLOSE NEW 12" MAIN LINE GATE VALVE ON SECOND AVENUE (INSTALLED PH.1) STA. 43+70.
3. CLOSE EXISTING 10" MAIN LINE GATE VALVE ON SECOND AVENUE APPROX. STA. 53+70.
4. INSTALL WATER SYSTEMS, AS SPECIFIED, FROM APPROX. STA. 43+70 TO 53+65.
5. TEST AND DISINFECT NEW WATER SYSTEMS.
6. CONNECT AND ACTIVATE BUILDING SERVICES.

PHASE 2B - SECOND AVE (APPROX. STA. 53+65 TO 64+50)

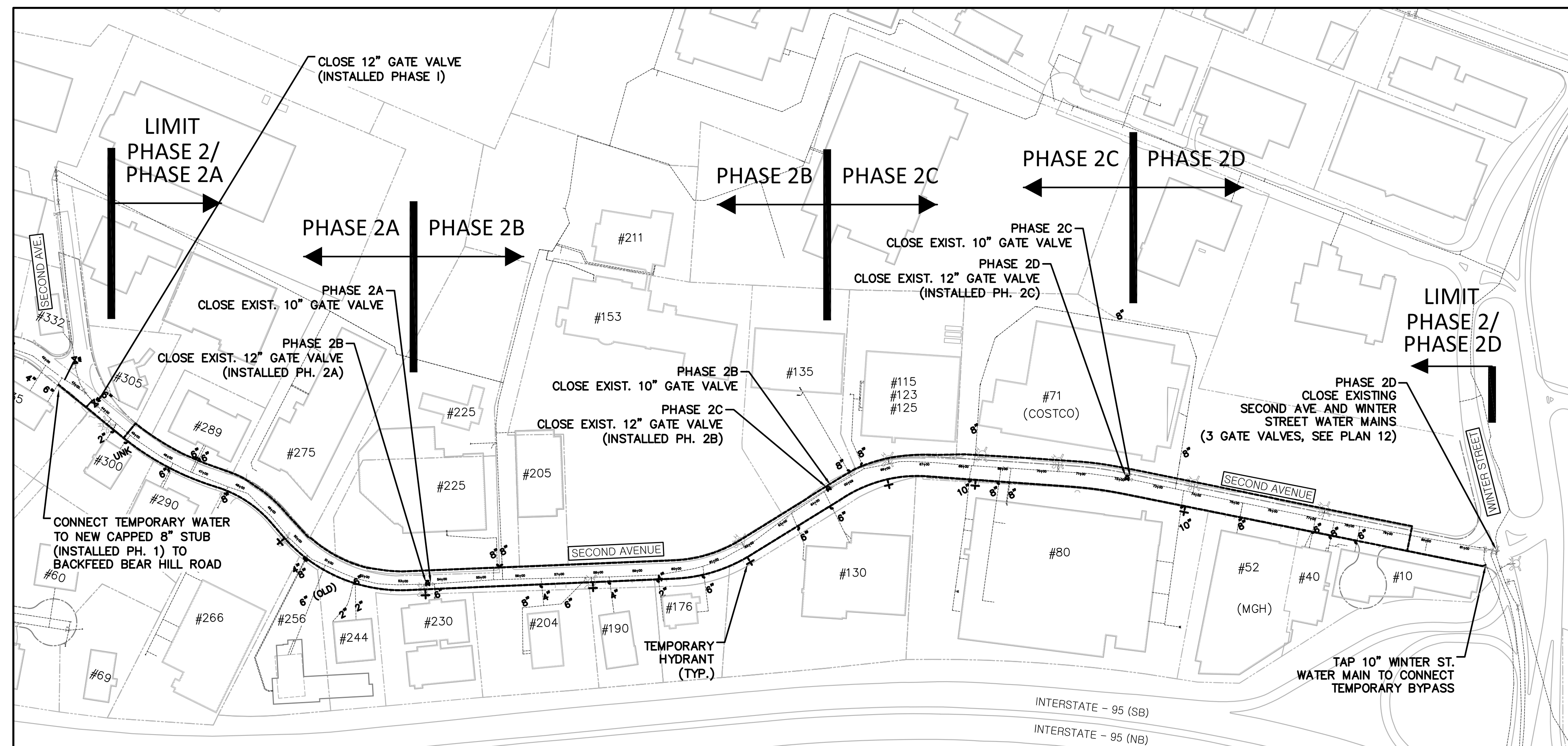
1. CONNECT BUILDINGS #230, #225, LINE FEEDING #211/205/153, #204, #190, #176, #130 TO TEMPORARY WATER BYPASS.
2. CLOSE NEW 12" MAIN LINE GATE VALVE ON SECOND AVENUE (INSTALLED PH. 2A) STA. 53+65.
3. CLOSE EXISTING 10" MAIN LINE GATE VALVE ON SECOND AVENUE APPROX. STA. 64+55.
4. INSTALL WATER SYSTEMS, AS SPECIFIED, FROM APPROX. STA. 53+65 TO 64+50.
5. TEST AND DISINFECT NEW WATER SYSTEMS.
6. CONNECT AND ACTIVATE BUILDING SERVICES.

PHASE 2C - SECOND AVE (APPROX. STA. 64+50 TO 72+20)

1. CONNECT BUILDINGS #135, #115/123/125, #80 (STH. SVC.) TO TEMPORARY WATER BYPASS.
2. CLOSE NEW 12" MAIN LINE GATE VALVE ON SECOND AVENUE (INSTALLED PH. 2B) STA. 64+50.
3. CLOSE EXISTING 10" MAIN LINE GATE VALVE ON SECOND AVENUE APPROX. STA. 72+25.
4. INSTALL WATER SYSTEMS, AS SPECIFIED, FROM APPROX. STA. 64+50 TO 72+20.
5. TEST AND DISINFECT NEW WATER SYSTEMS.
6. CONNECT AND ACTIVATE BUILDING SERVICES.

PHASE 2D - SECOND AVE (APPROX. STA. 72+20 TO 81+40)

1. CONNECT BUILDINGS #80 (NTH. SVC.), #40/52 (MGH), #10 TO TEMPORARY WATER BYPASS.
2. CLOSE NEW 12" MAIN LINE GATE VALVE ON SECOND AVENUE APPROX. STA. 72+20.
3. CLOSE 3 EXISTING 12" MAIN LINE GATE VALVES SECOND AVE. & WINTER ST. (SEE PLAN 12)
4. INSTALL WATER SYSTEMS, AS SPECIFIED, FROM APPROX. STA. 72+20 TO 81+40.
5. TEST AND DISINFECT NEW WATER SYSTEMS.
6. CONNECT AND ACTIVATE BUILDING SERVICES.



WATER MAIN BYPASS PLAN - PHASE 2
SCALE: 1"=200'

WATER MAIN BYPASS PLAN PHASE 1 & PHASE 2		
WATER MAIN REPLACEMENT PROJECT CITY OF WALTHAM, MASSACHUSETTS MIDDLESEX COUNTY		
GCG ASSOCIATES, INC.		
WILMINGTON		MASSACHUSETTS
SCALE: AS NOTED		DATE: JUNE 22, 2016
JOB NO. \ FILE NAME: 1584-BYPASS	DESIGNED BY: S.B.H. DRAWN BY: S.B.H. CHECKED BY: M.J.C.	PLAN NO. 3 of 17

LIMIT
PHASE 1/
PHASE 1A

PROPOSED HYDRANT, CUT IN PRIOR TO
INSTALLING TEMPORARY WATER
1- 12"x6" DI TAPPING SLEEVE & GATE (MJ)
6" DI PIPE #50

CONNECT TEMP WATER
TO NEW HYDRANT

REMOVE EXISTING
HYDRANT ASSEMBLY
AND 6" PIPE

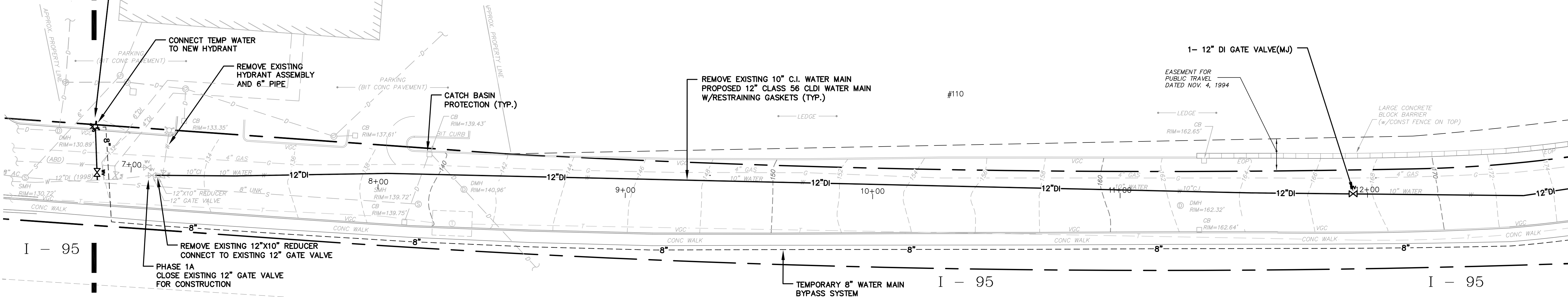
CATCH BASIN
PROTECTION (TYP.)

REMOVE EXISTING 10" C.I. WATER MAIN
PROPOSED 12" CLASS 56 CLDI WATER MAIN
W/RESTRAINING GASKETS (TYP.)

1- 12" DI GATE VALVE(MJ)

EASEMENT FOR
PUBLIC TRAVEL
DATED NOV. 4, 1994

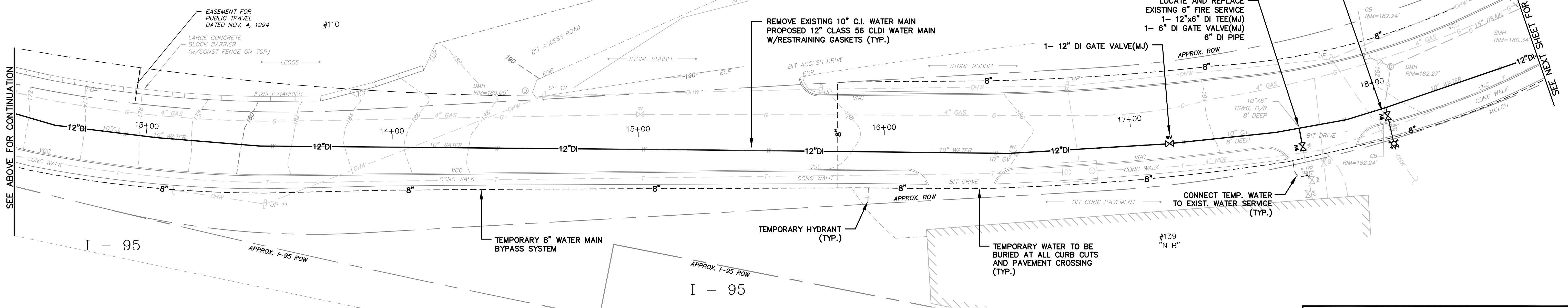
LARGE CONCRETE
BLOCK BARRIER
(W/CONST FENCE ON TOP)



BEAR HILL ROAD

PLAN
SCALE: 1" = 20'

LIMIT
PHASE 1/
PHASE 1A



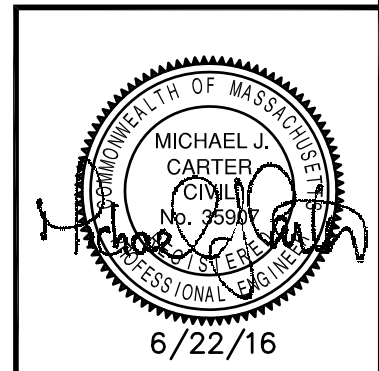
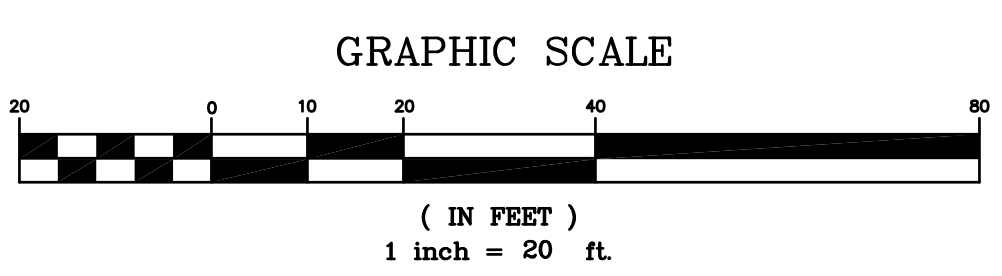
BEAR HILL ROAD

PLAN
SCALE: 1" = 20'

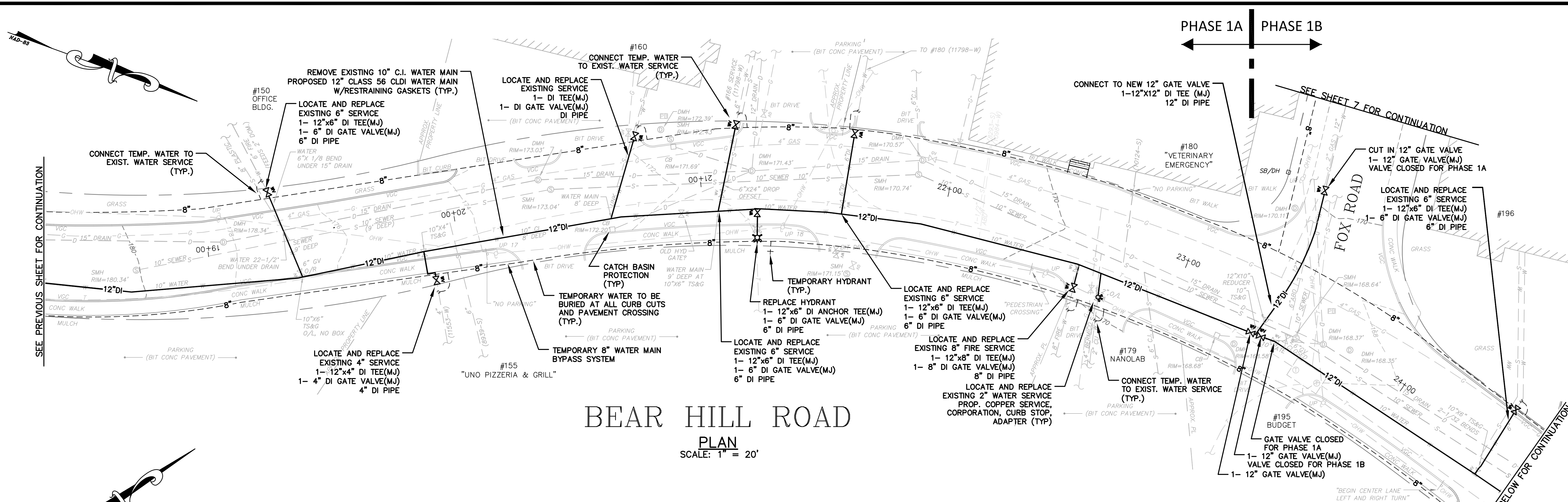
SEE ABOVE FOR CONTINUATION

SEE BELOW FOR CONTINUATION

PHASE 1 - BEAR HILL ROAD STA 6+50 TO STA 18+50		
CITY OF WALTHAM, MASSACHUSETTS BEAR HILL ROAD & SECOND AVENUE WATER MAIN REPLACEMENT PROJECT		
GCG ASSOCIATES, INC.		
WILMINGTON	MASSACHUSETTS	
SCALE: 1" = 20'	DATE: JUNE 22, 2016	
JOB NO. \FILE NAME: 1604-DESIGN-BEAR_HILL	DESIGNED BY: S.B.H. DRAWN BY: T.D.O. CHECKED BY: M.J.C.	PLAN NO. 4 OF 17

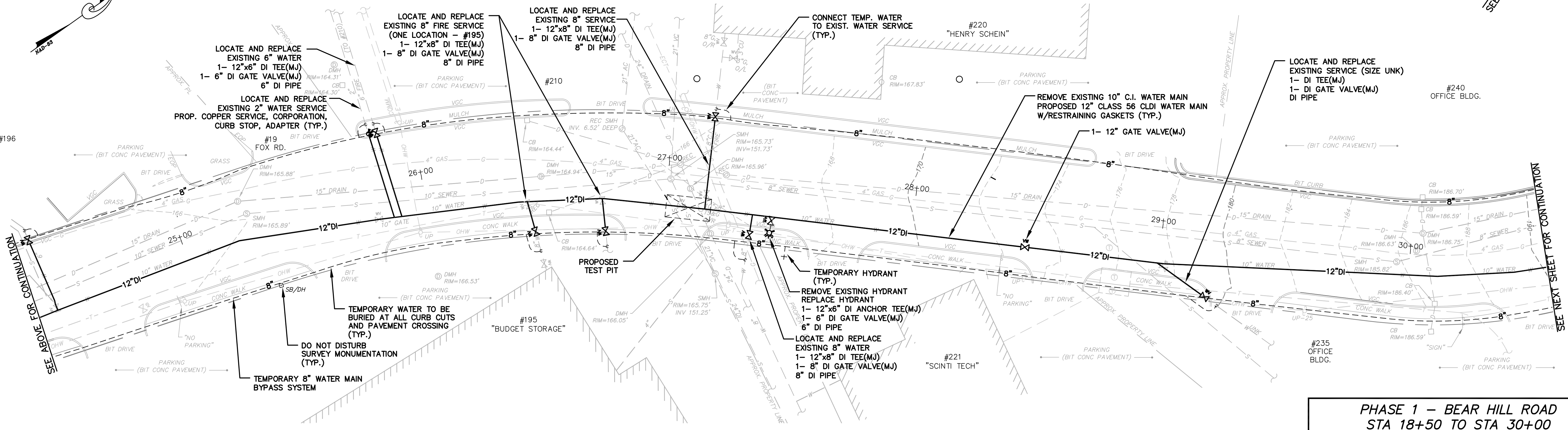


PHASE 1A | PHASE 1B



BEAR HILL ROAD

PLAN
SCALE: 1" = 20'



BEAR HILL ROAD

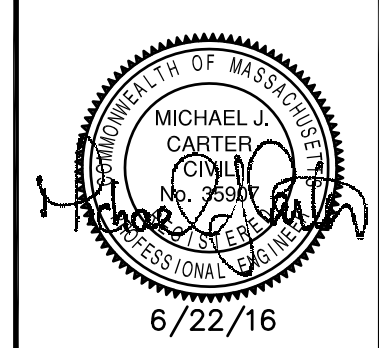
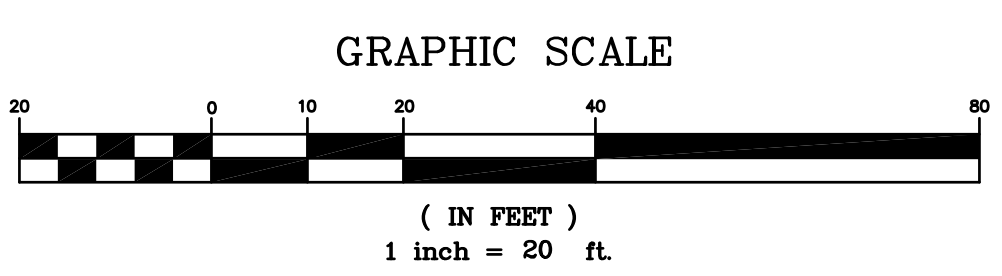
PLAN
SCALE: 1" = 20'

PHASE 1 - BEAR HILL ROAD
STA 18+50 TO STA 30+00
CITY OF WALTHAM, MASSACHUSETTS
BEAR HILL ROAD & SECOND AVENUE
WATER MAIN REPLACEMENT PROJECT

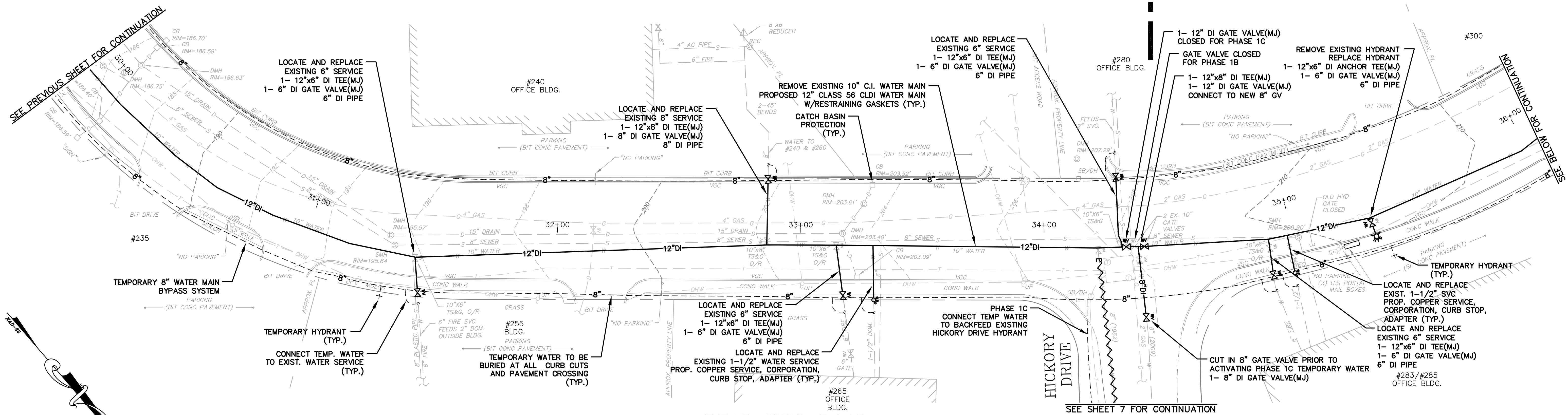
GCG ASSOCIATES, INC.
WILMINGTON MASSACHUSETTS

SCALE: 1" = 20' DATE: JUNE 22, 2016

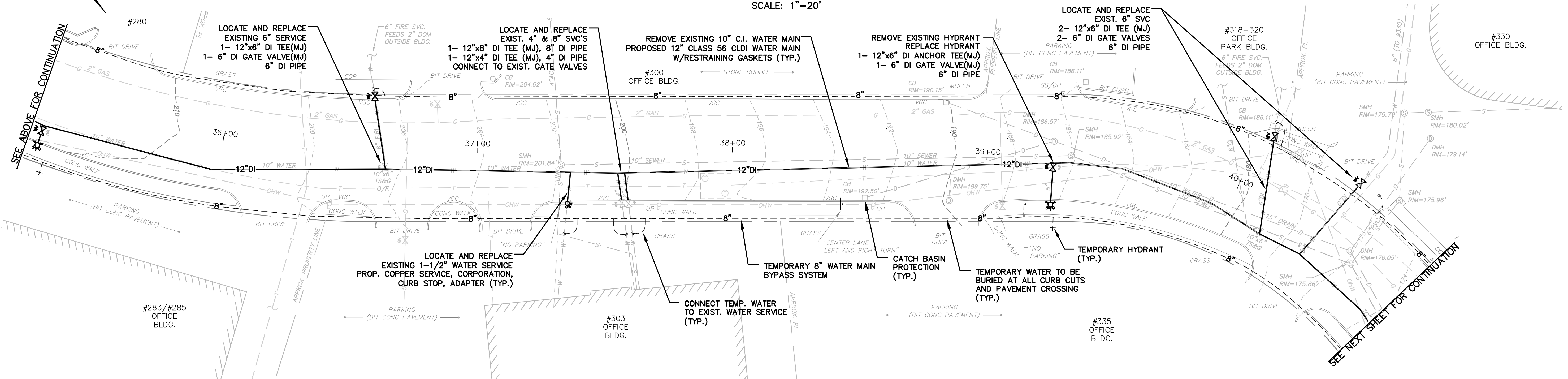
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PHASE 1B | PHASE 1C



BEAR HILL ROAD PLAN
SCALE: 1"=20'



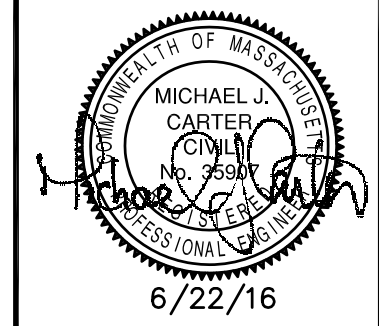
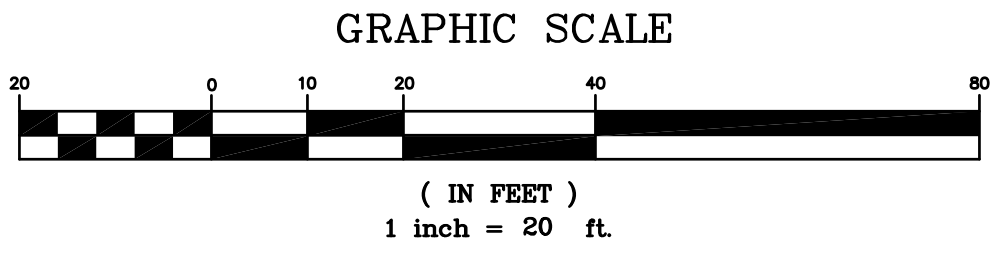
BEAR HILL ROAD PLAN
SCALE: 1"=20'

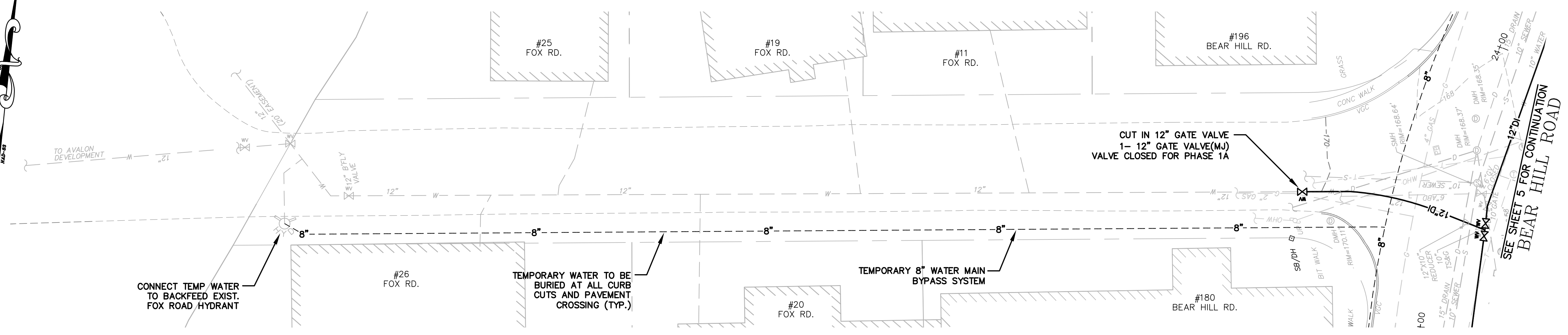
PHASE 1 - BEAR HILL ROAD
STA 30+00 TO STA 41+00
CITY OF WALTHAM, MASSACHUSETTS
BEAR HILL ROAD & SECOND AVENUE
WATER MAIN REPLACEMENT PROJECT

GCG ASSOCIATES, INC.
WILMINGTON MASSACHUSETTS

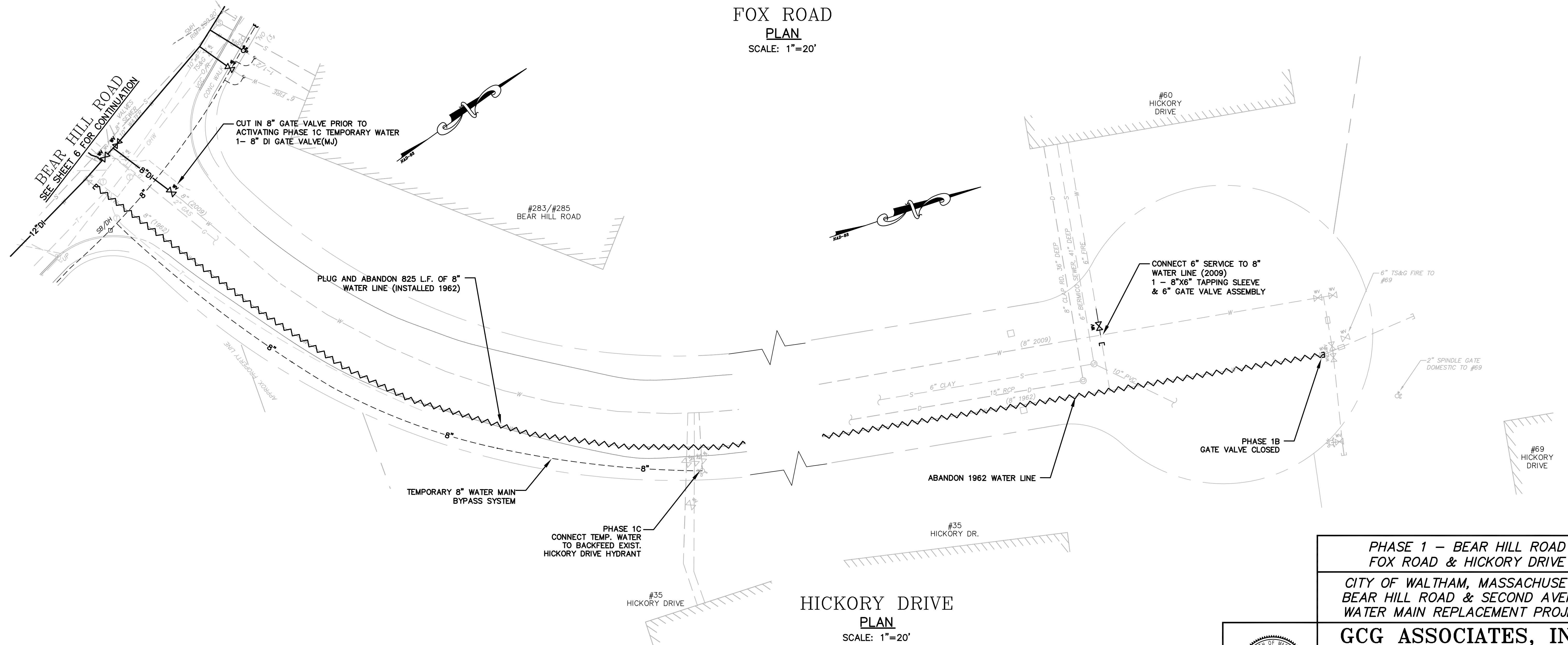
SCALE: 1"= 20' DATE: JUNE 22, 2016

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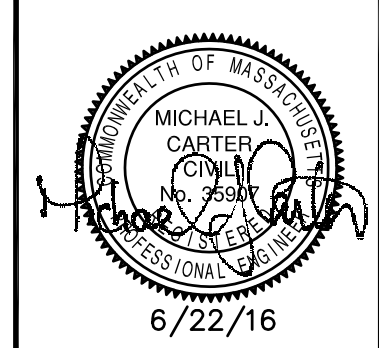
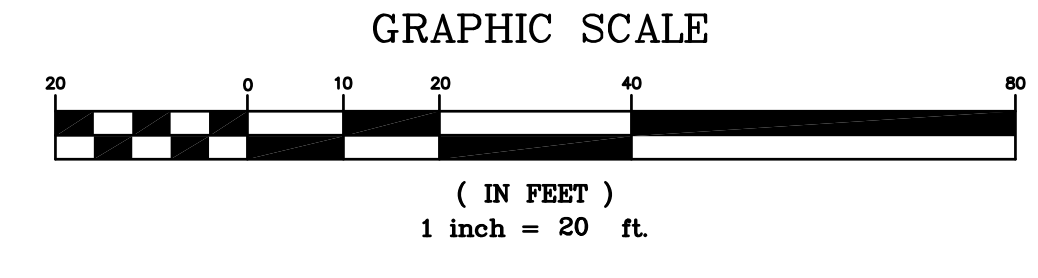




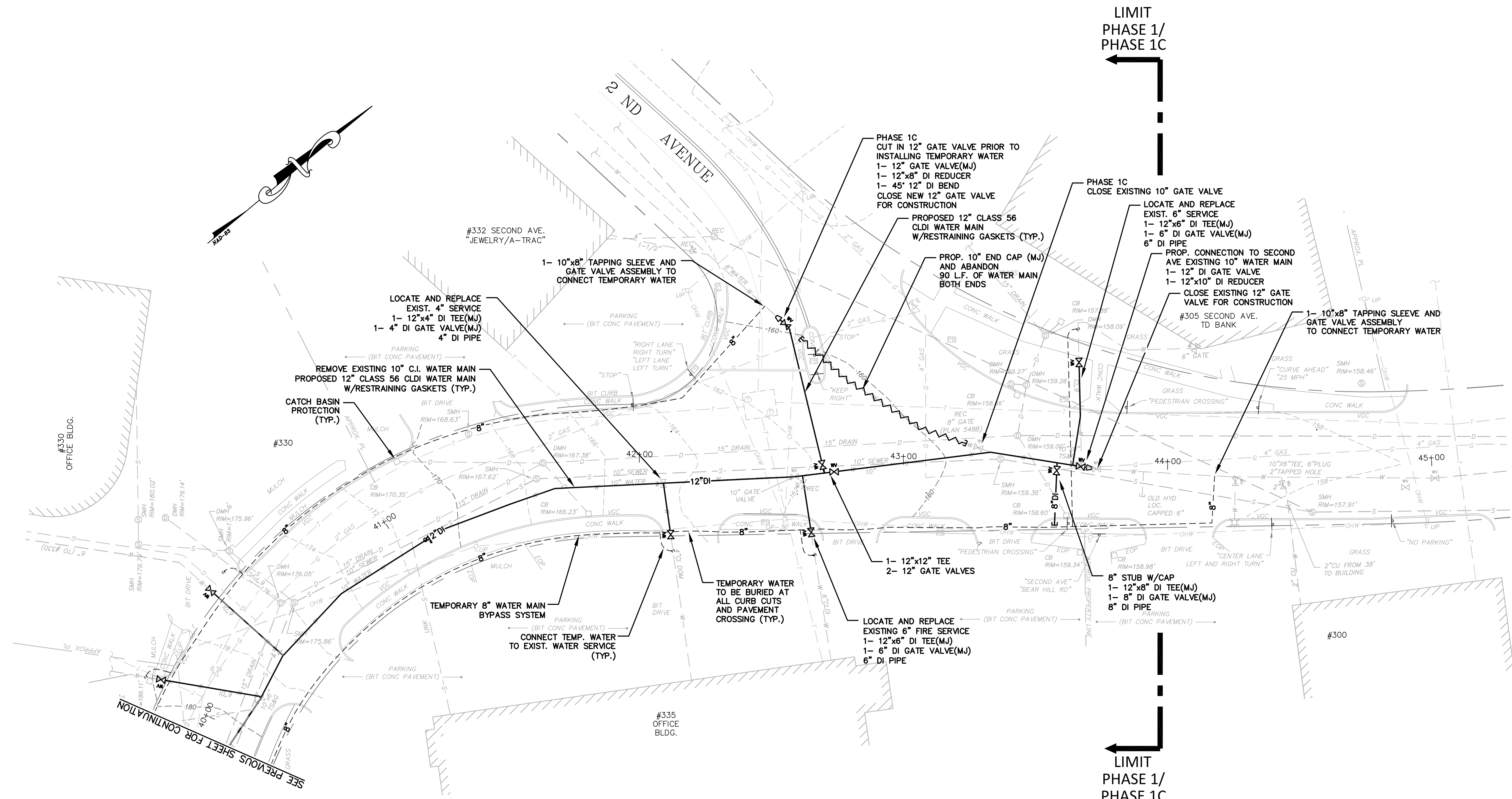
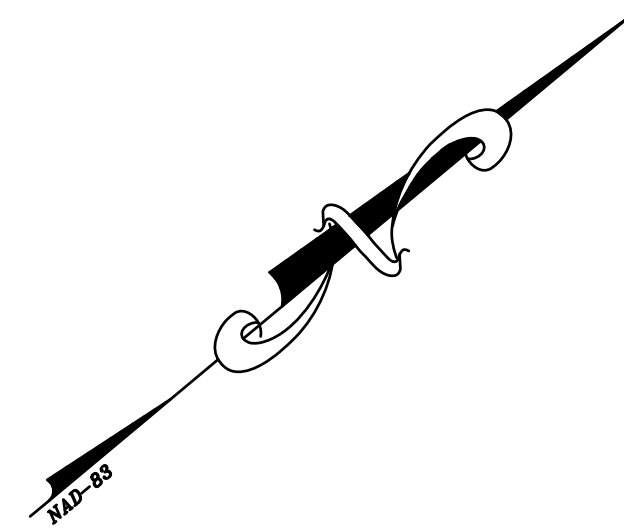
**FOX ROAD
PLAN**
SCALE: 1"=20'



**HICKORY DRIVE
PLAN**
SCALE: 1"=20'



PHASE 1 - BEAR HILL ROAD FOX ROAD & HICKORY DRIVE		
CITY OF WALTHAM, MASSACHUSETTS BEAR HILL ROAD & SECOND AVENUE WATER MAIN REPLACEMENT PROJECT		
GCG ASSOCIATES, INC.		
WILMINGTON		MASSACHUSETTS
SCALE: 1"= 20'		DATE: JUNE 22, 2016
JOB NO. \ FILE NAME: 1604-DESIGN-BEAR_HILL	DESIGNED BY: S.B.H. DRAWN BY: T.D.O. CHECKED BY: M.J.C.	PLAN NO. 7 OF 17



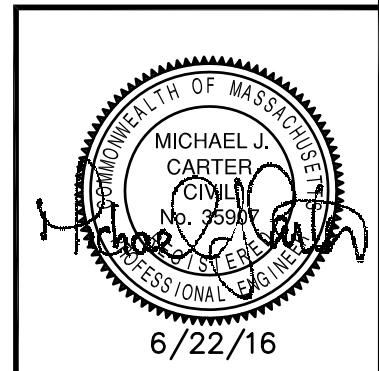
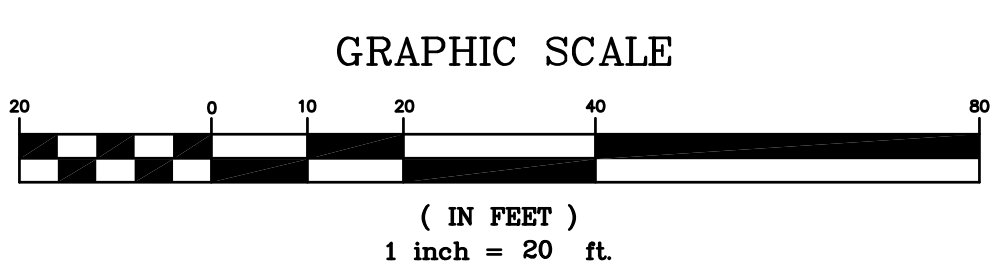
BEAR HILL ROAD

PLAN
SCALE: 1" = 20'

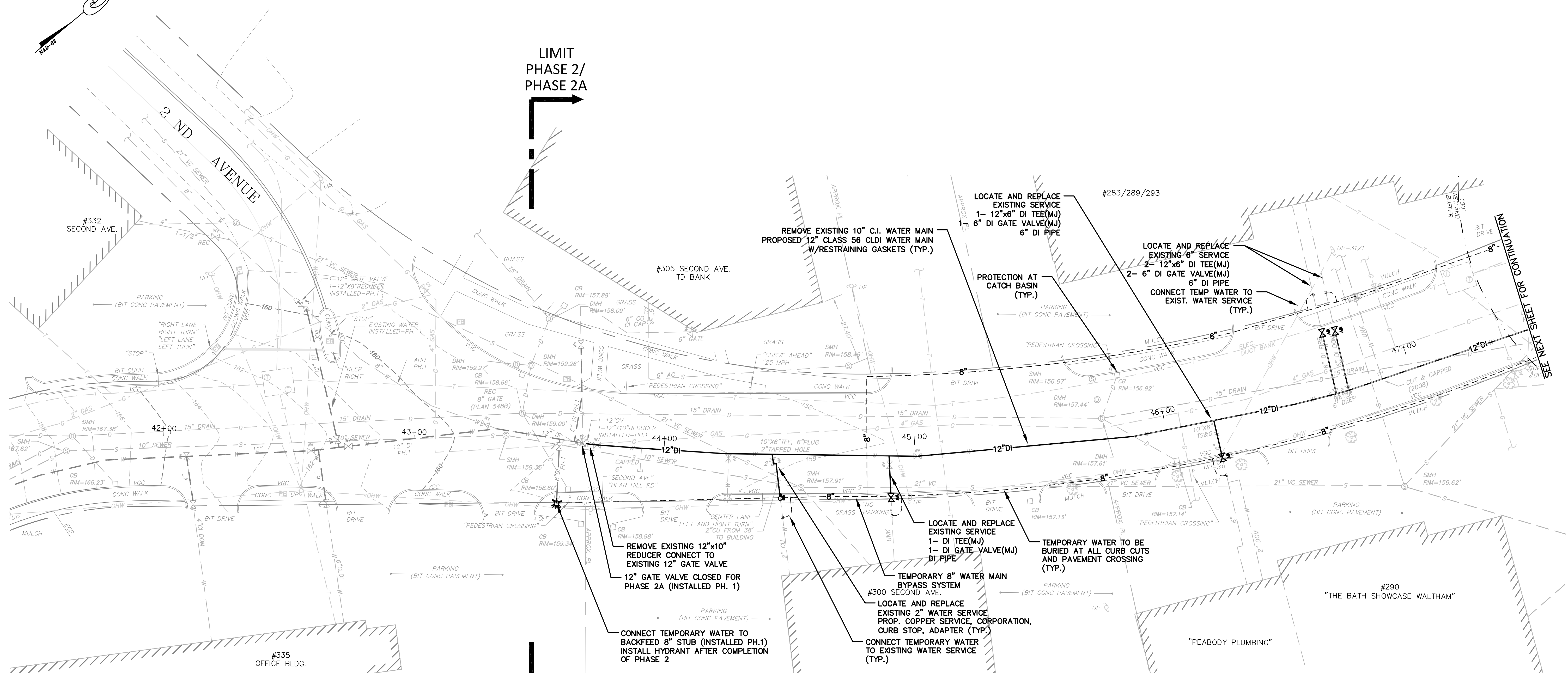
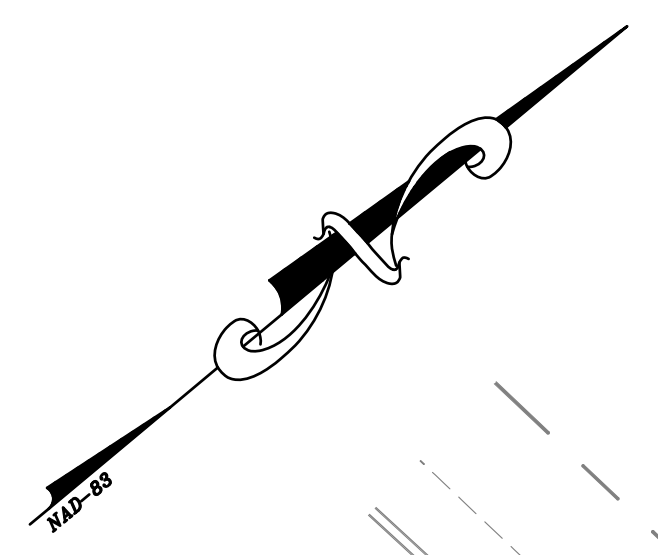
LIMIT
PHASE 1/
PHASE 1C

LIMIT
PHASE 1/
PHASE 1C

SEE PREVIOUS SHEET FOR CONTINUATION



<p>PHASE 1 – BEAR HILL ROAD STA. 41+00 TO 44+00</p>		
<p>CITY OF WALTHAM, MASSACHUSETTS BEAR HILL ROAD & SECOND AVENUE WATER MAIN REPLACEMENT PROJECT</p>		
<p>GCG ASSOCIATES, INC.</p>		<p>WILMINGTON MASSACHUSETTS</p>
<p>SCALE: 1" = 20'</p>		<p>DATE: JUNE 22, 2016</p>
<p>JOB NO. \FILE NAME: 1604-DESIGN-BEAR_HILL</p>	<p>DESIGNED BY: S.B.H. DRAWN BY: T.D.O. CHECKED BY: M.J.C.</p>	<p>PLAN NO. 8 of 17</p>



**SECOND AVENUE
PLAN**
SCALE: 1"=20'

LIMIT
PHASE 2/
PHASE 2A

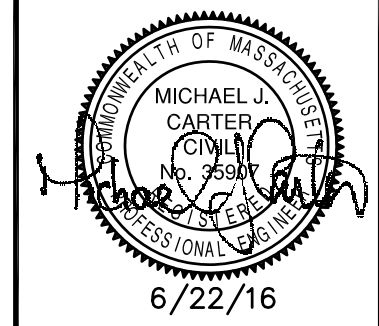
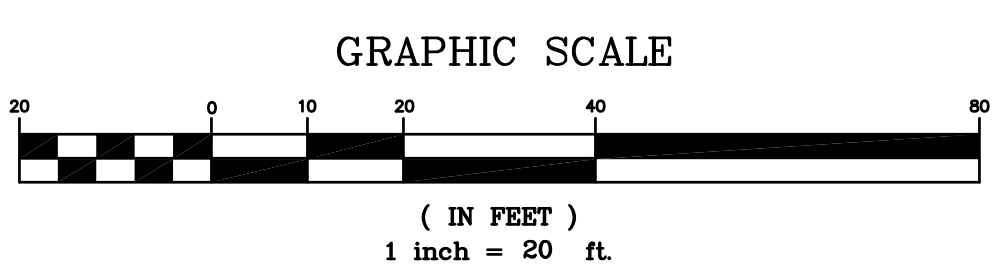
LIMIT
PHASE 2/
PHASE 2A

**PHASE 2 – SECOND AVENUE
STA 42+00 TO STA 47+50**
**CITY OF WALTHAM, MASSACHUSETTS
BEAR HILL ROAD & SECOND AVENUE
WATER MAIN REPLACEMENT PROJECT**

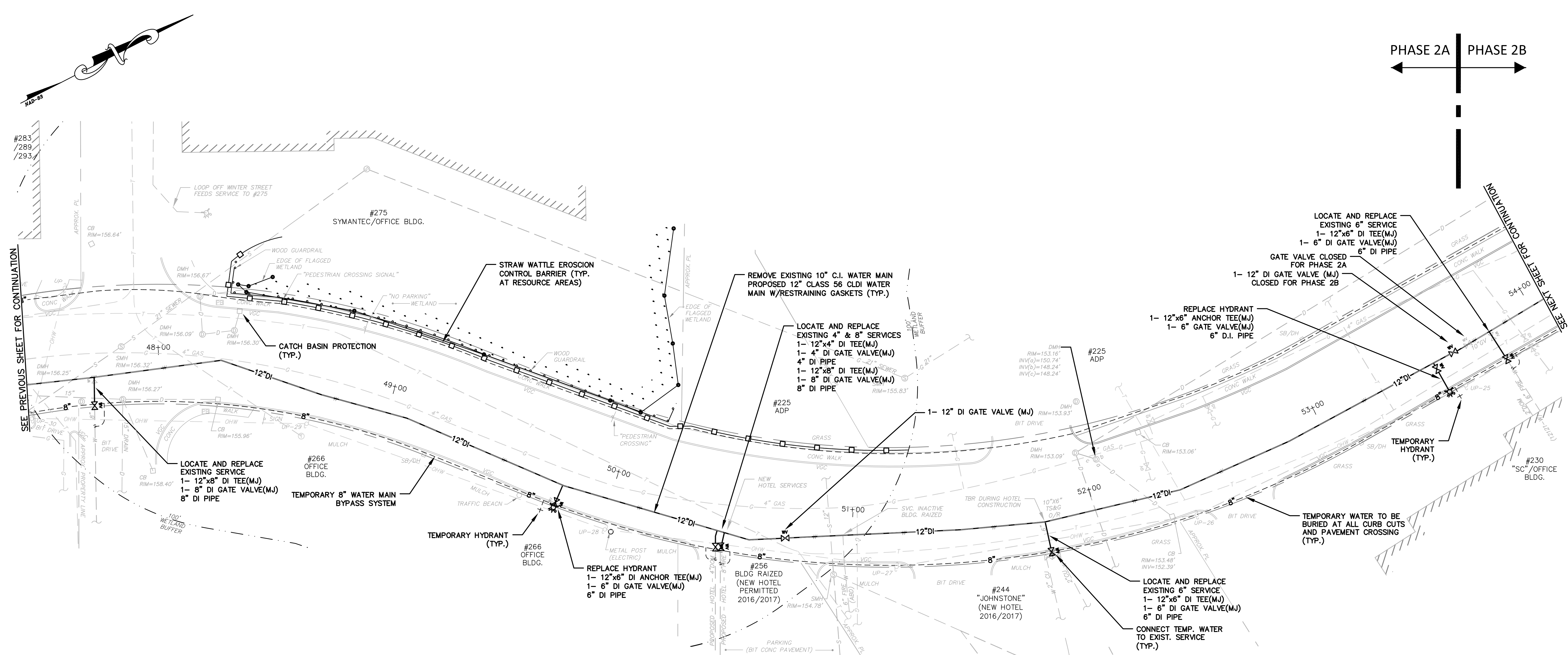
GCG ASSOCIATES, INC.
WILMINGTON MASSACHUSETTS

SCALE: 1"= 20' DATE: JUNE 22, 2016

JOB NO. \ FILE NAME: 1604-DESIGN-SECOND	DESIGNED BY: S.B.H. DRAWN BY: T.D.O. CHECKED BY: M.J.C.	PLAN NO. 9 of 17
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PHASE 2A PHASE 2B



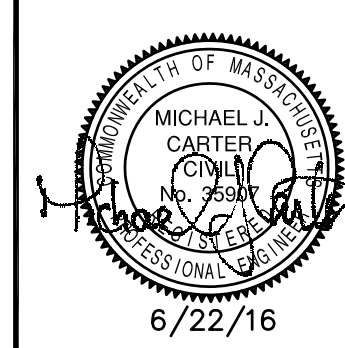
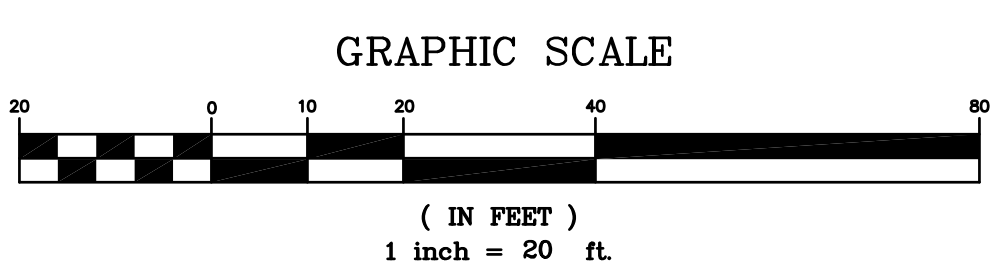
SECOND AVENUE
PLAN
SCALE: 1"=20'

PHASE 2 – SECOND AVENUE
STA 47+50 TO STA 54+00
CITY OF WALTHAM, MASSACHUSETTS
BEAR HILL ROAD & SECOND AVENUE
WATER MAIN REPLACEMENT PROJECT

GCG ASSOCIATES, INC.
WILMINGTON MASSACHUSETTS

SCALE: 1"= 20' DATE: JUNE 22, 2016

JOB NO. \FILE NAME: 1604-DESIGN-SECOND
DESIGNED BY: S.B.H.
DRAWN BY: T.D.O.
CHECKED BY: M.J.C.
PLAN NO. 10 of 17

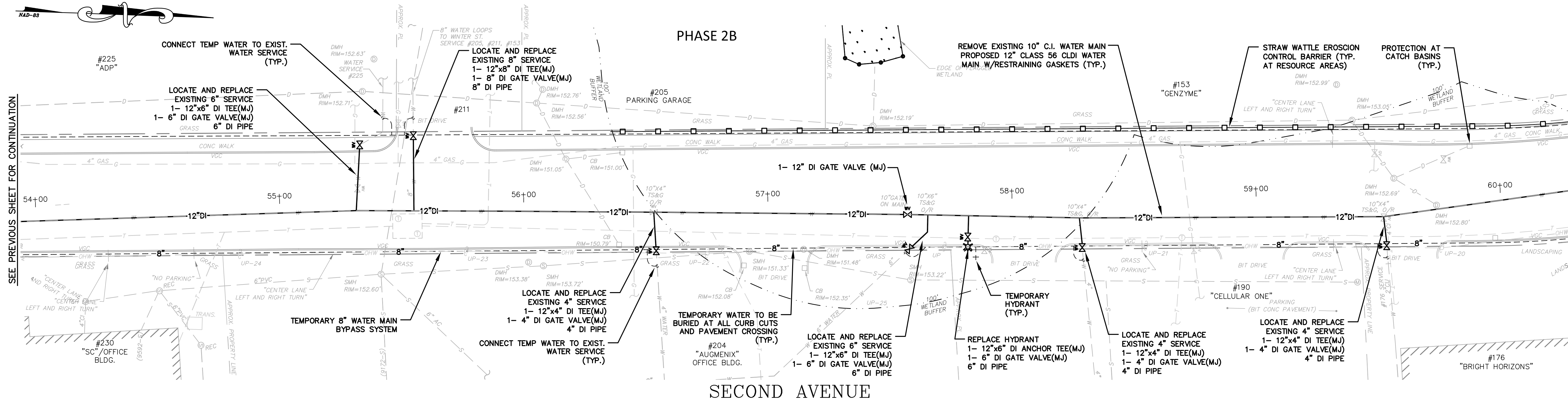




PHASE 2B

SEE PREVIOUS SHEET FOR CONTINUATION

SEE BELOW FOR CONTINUATION



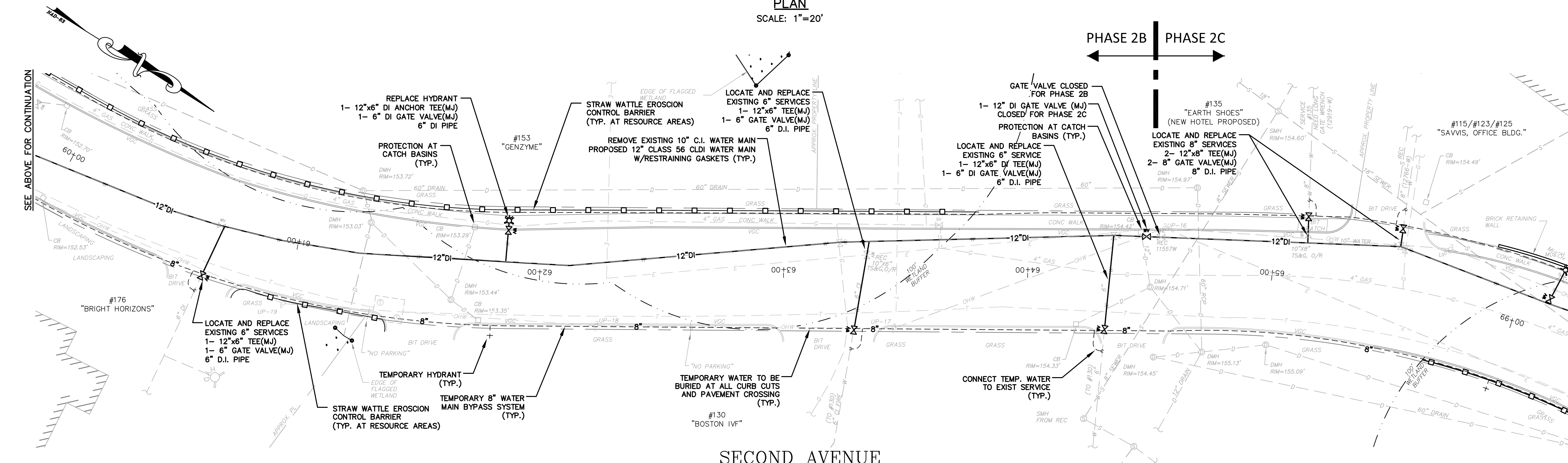
SECOND AVENUE

PLAN
SCALE: 1"=20'

PHASE 2B PHASE 2C

SEE ABOVE FOR CONTINUATION

SEE NEXT SHEET FOR CONTINUATION

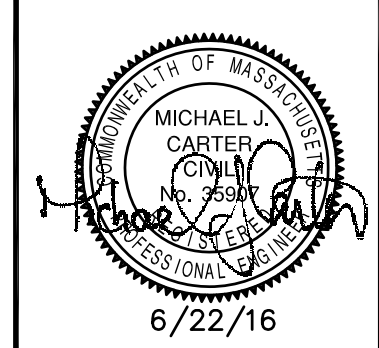
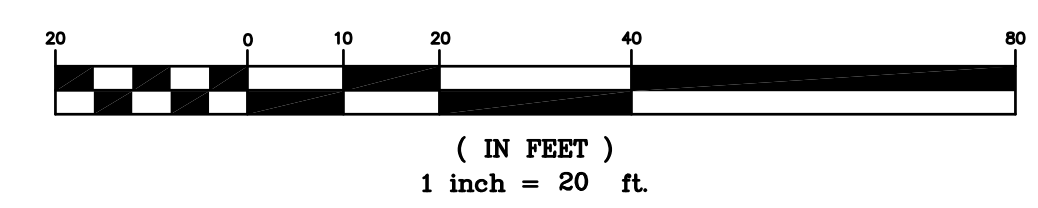


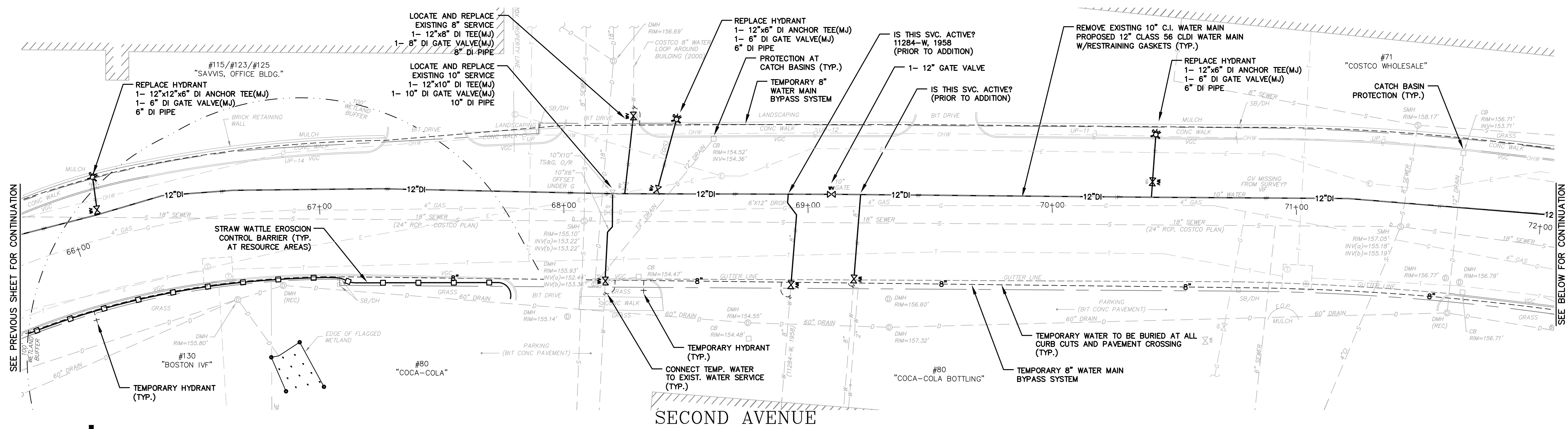
SECOND AVENUE

PLAN
SCALE: 1"=20'

PHASE 2 - SECOND AVENUE STA 54+00 TO STA 66+00		
CITY OF WALTHAM, MASSACHUSETTS BEAR HILL ROAD & SECOND AVENUE WATER MAIN REPLACEMENT PROJECT		
GCG ASSOCIATES, INC.		
WILMINGTON	MASSACHUSETTS	
SCALE: 1"= 20'	DATE: JUNE 22, 2016	
JOB NO./FILE NAME: 1604-DESIGN-SECOND	DESIGNED BY: S.B.H. DRAWN BY: T.D.O. CHECKED BY: M.J.C.	PLAN NO. 11 OF 17

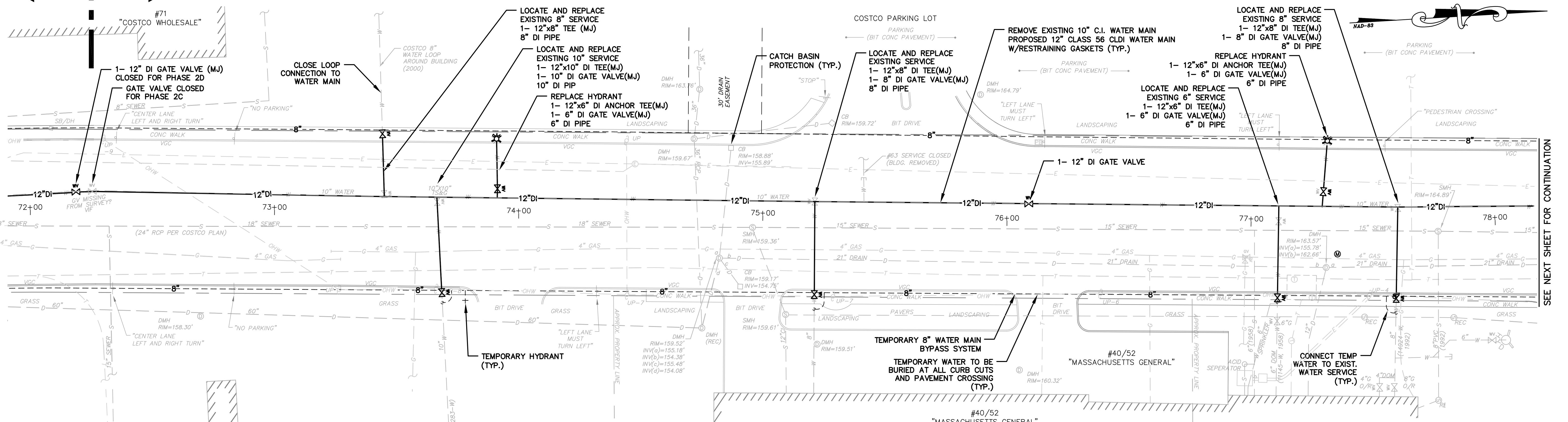
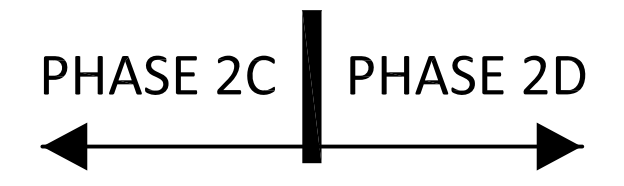
GRAPHIC SCALE





SECOND AVENUE

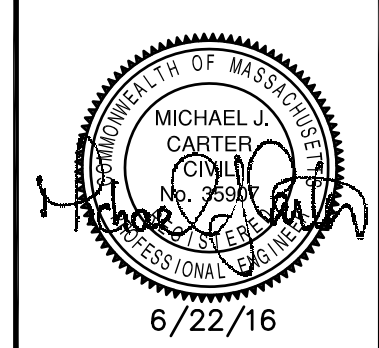
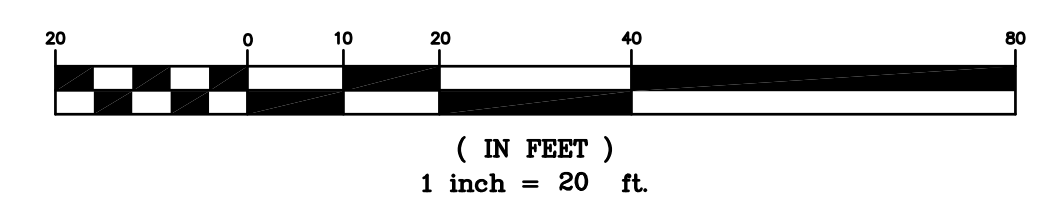
PLAN
SCALE: 1"=20'



SECOND AVENUE

PLAN
SCALE: 1"=20'

GRAPHIC SCALE



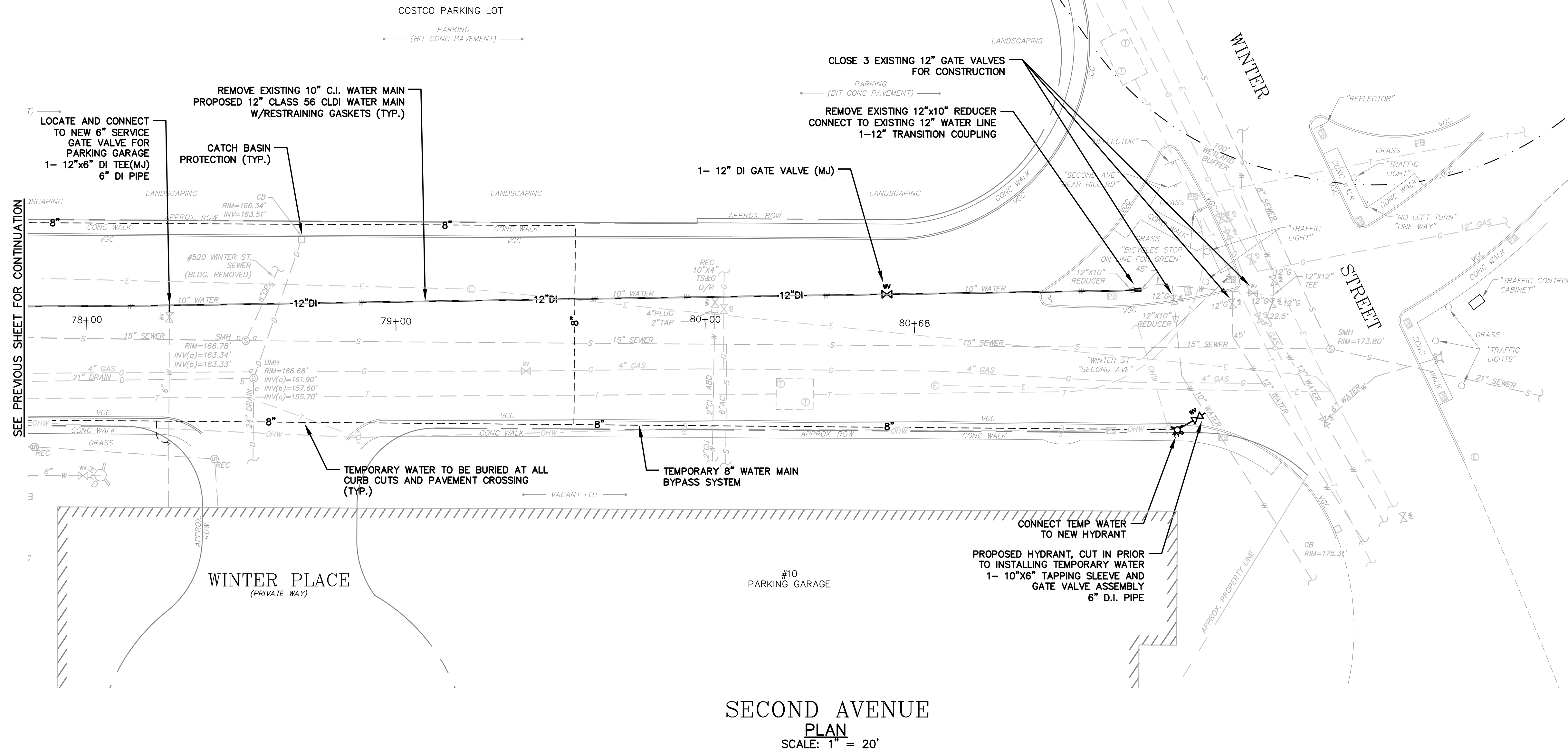
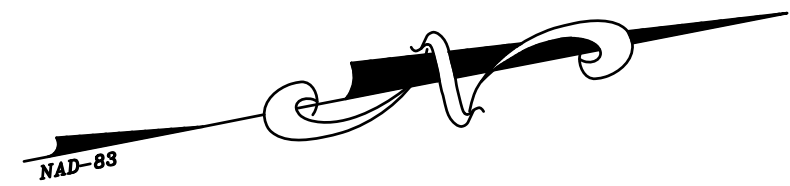
PHASE 2 - SECOND AVENUE STA 66+00 TO STA 78+00		
CITY OF WALTHAM, MASSACHUSETTS BEAR HILL ROAD & SECOND AVENUE WATER MAIN REPLACEMENT PROJECT		
GCG ASSOCIATES, INC.		
WILMINGTON		MASSACHUSETTS
SCALE: 1"= 20'		DATE: JUNE 22, 2016
JOB NO./FILE NAME: 1604-DESIGN-SECOND	DESIGNED BY: S.B.H. DRAWN BY: T.D.O. CHECKED BY: M.J.C.	PLAN NO. 12 OF 17

SEE PREVIOUS SHEET FOR CONTINUATION

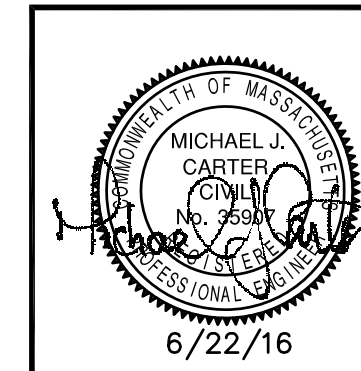
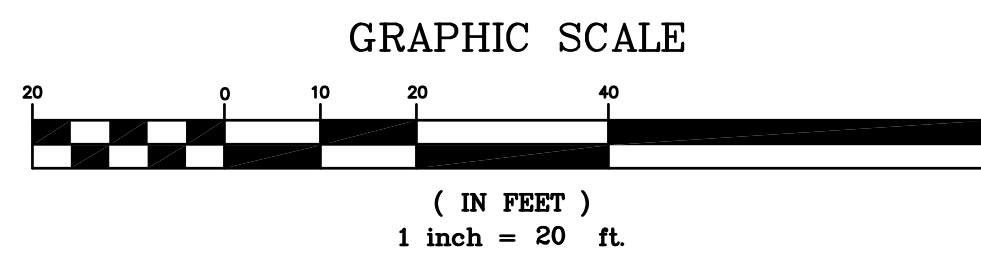
SEE BELOW FOR CONTINUATION

SEE ABOVE FOR CONTINUATION

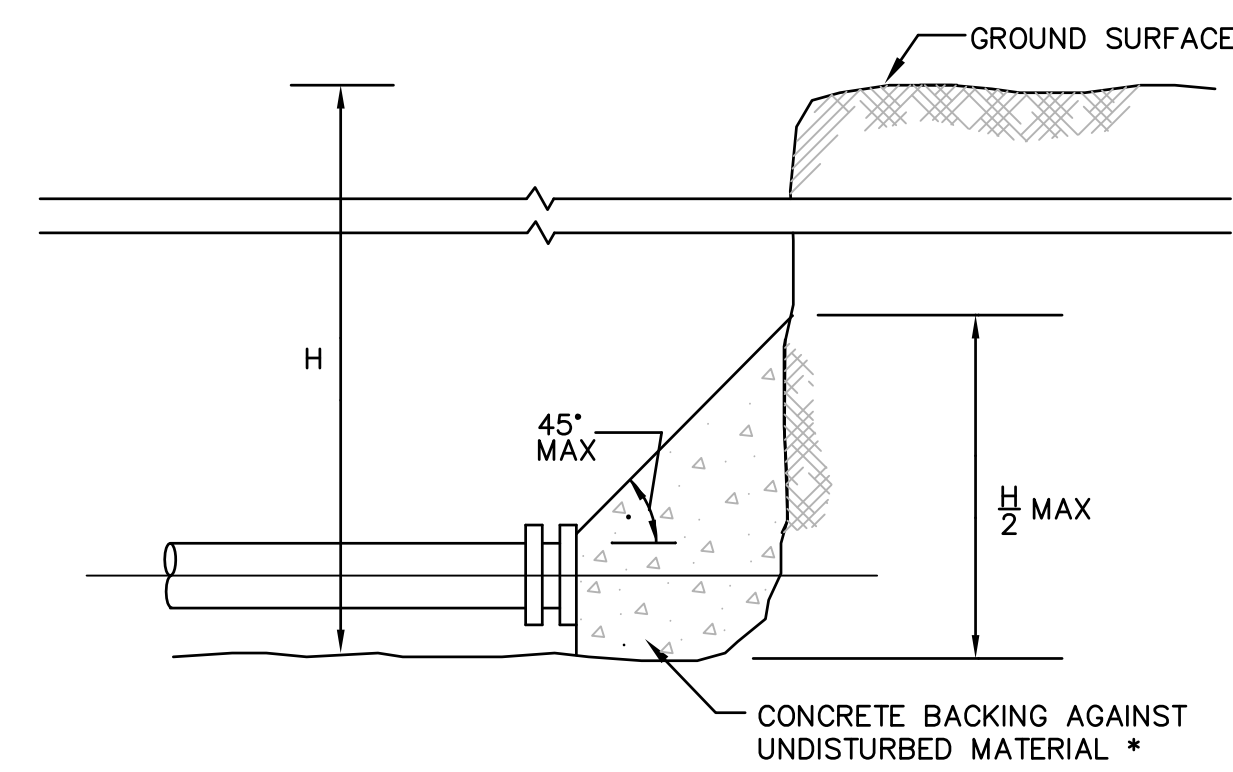
SEE NEXT SHEET FOR CONTINUATION



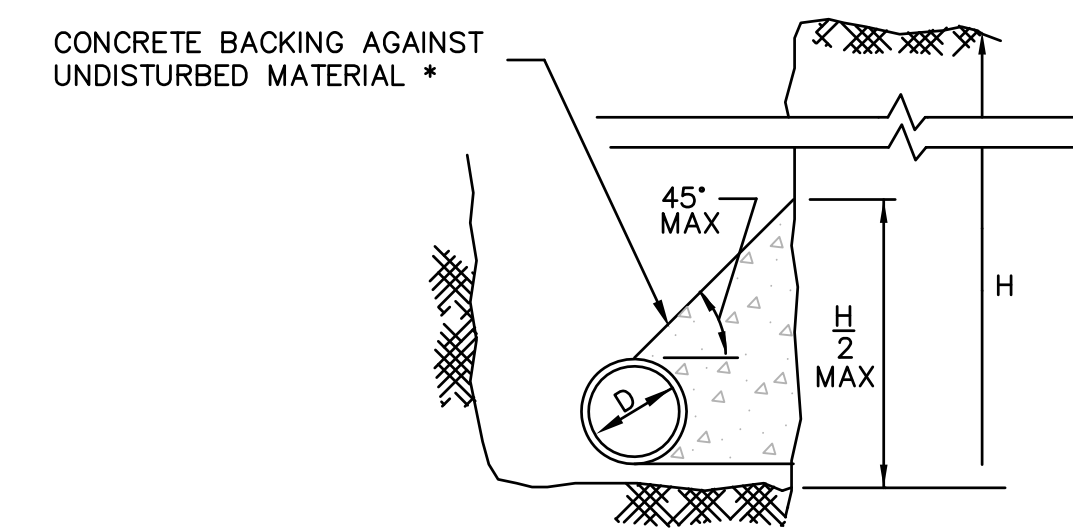
SECOND AVENUE
 PLAN
 SCALE: 1" = 20'



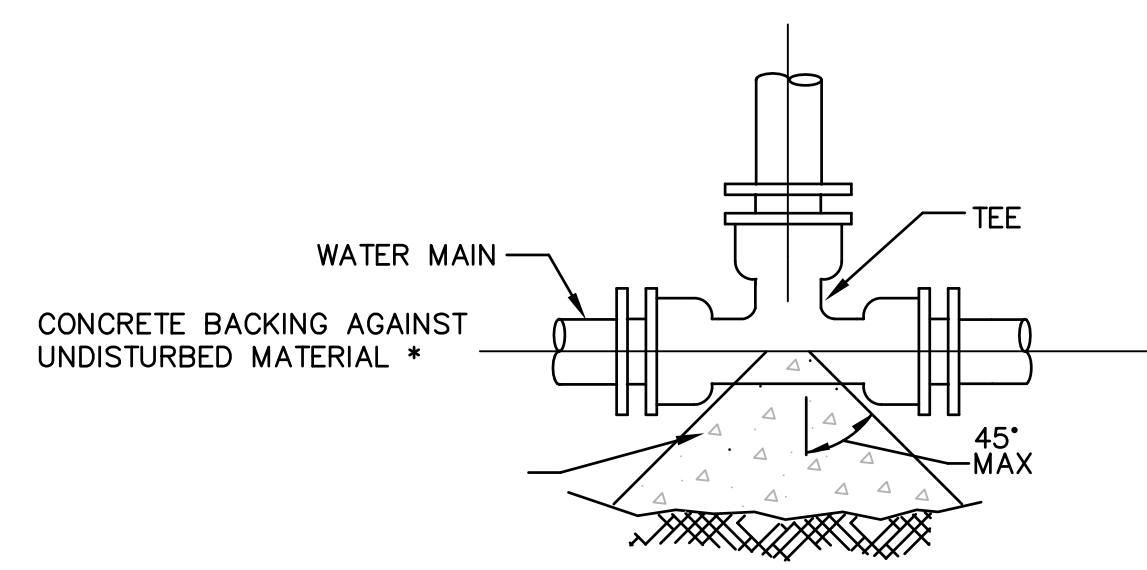
PHASE 2 - SECOND AVENUE STA 78+00 TO STA 90+50		
CITY OF WALTHAM, MASSACHUSETTS BEAR HILL ROAD & SECOND AVENUE WATER MAIN REPLACEMENT PROJECT		
GCG ASSOCIATES, INC. WILMINGTON MASSACHUSETTS		SCALE: 1" = 20' DATE: JUNE 22, 2016
JOB NO. \ FILE NAME: 1604-DESIGN-SECOND	DESIGNED BY: S.B.H. DRAWN BY: T.D.O. CHECKED BY: M.J.C.	PLAN NO. 13 OF 17



TYPICAL WATER MAIN PLUG
N.T.S.

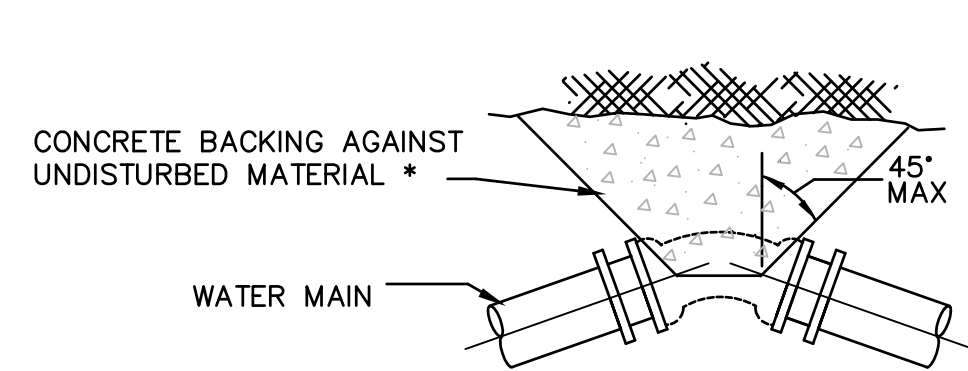


TYPICAL WATER MAIN THRUST BLOCK SECTION DETAILS
N.T.S.



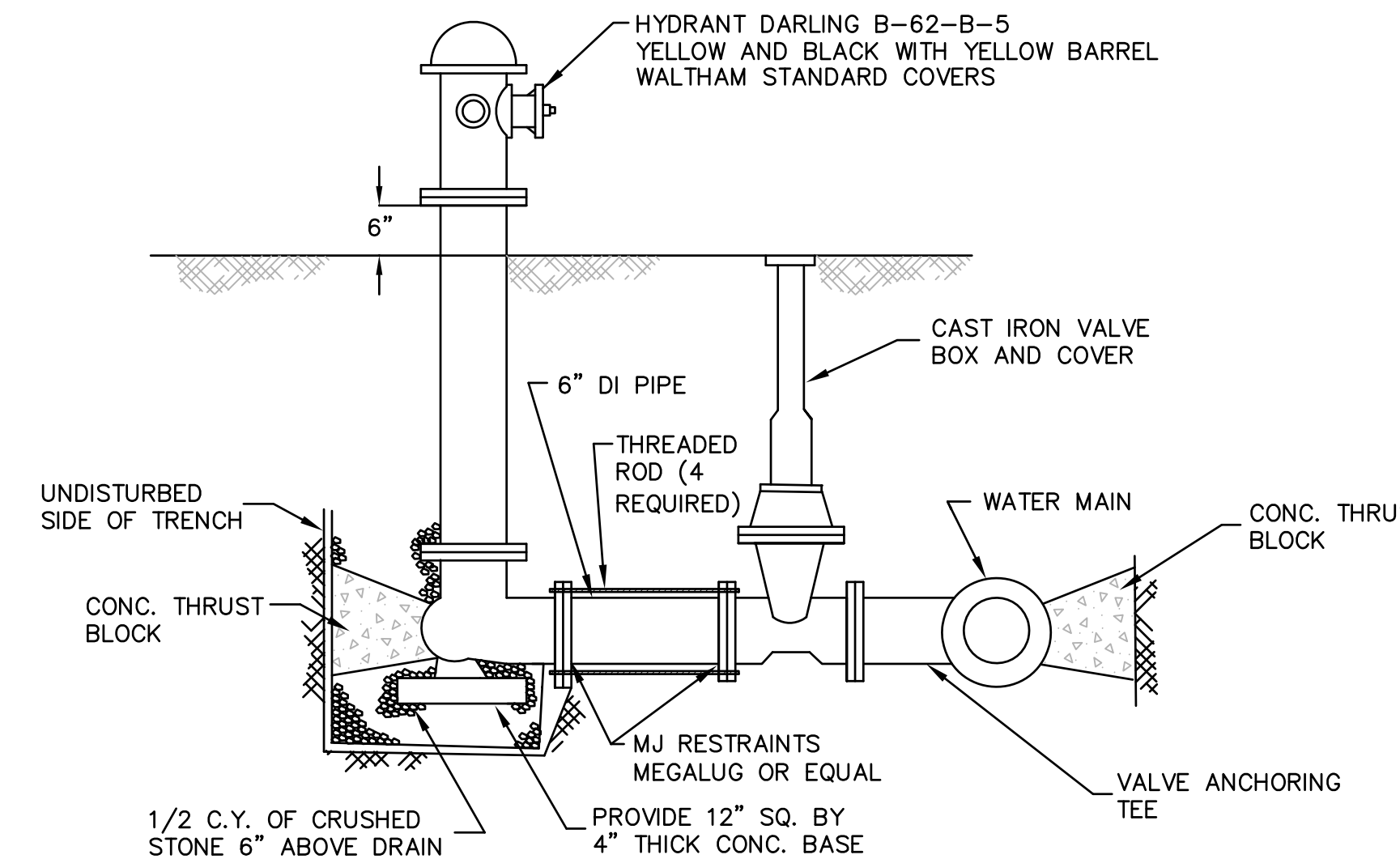
* SEE TABLE ON THRUST BLOCK BEARING AREAS FOR THE AREA OF CONCRETE REQUIRED.

TYPICAL WATER MAIN TEE THRUST BLOCK DETAILS
N.T.S.



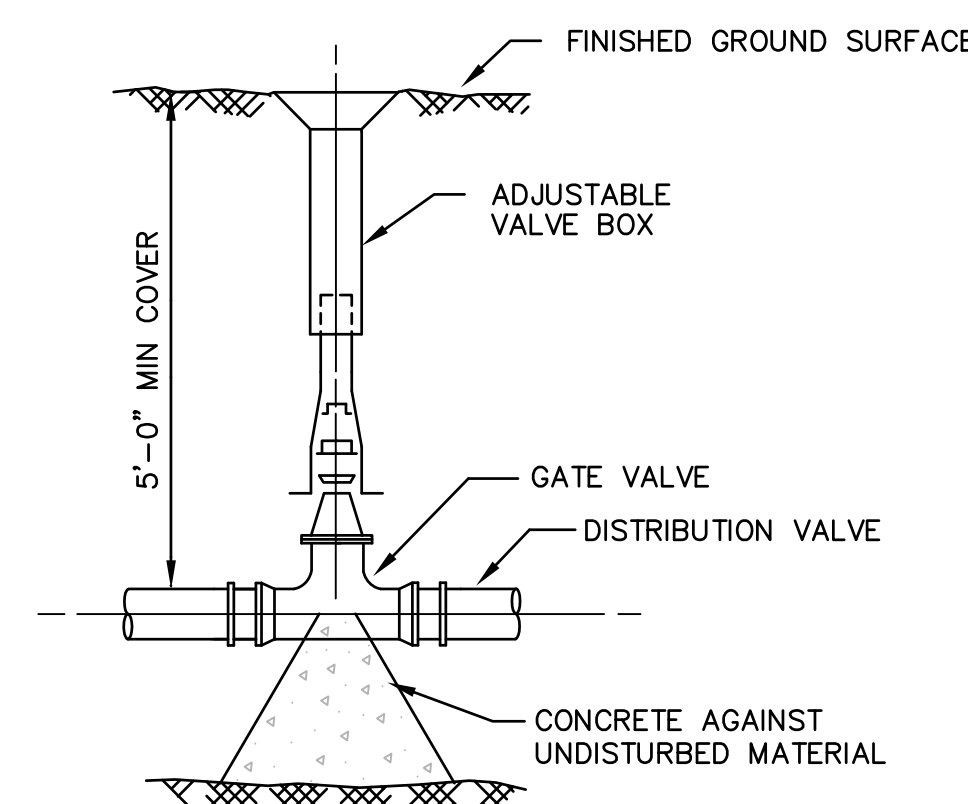
* SEE TABLE ON THRUST BLOCK BEARING AREAS FOR THE AREA OF CONCRETE REQUIRED.

TYPICAL WATER MAIN BEND THRUST BLOCK DETAILS
N.T.S.

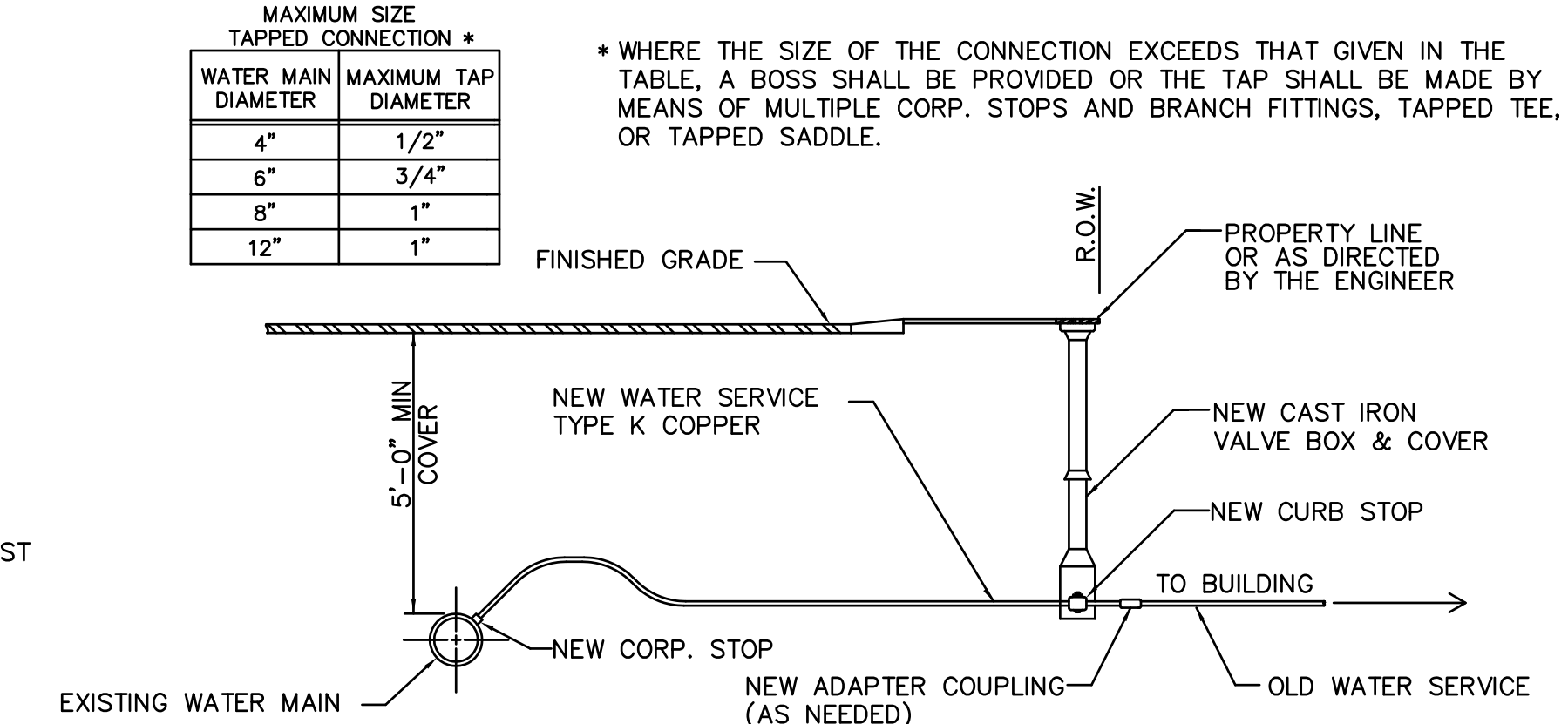


HYDRANT NOTES:
1. HYDRANT VALVE AND TEE SHALL BE RUDDED TOGETHER.
2. ALL HYDRANTS SHALL BE PLACED AT BACK OF SIDEWALK WITH HYDRANT MARKER.

HYDRANT DETAIL
N.T.S.



WATER VALVE DETAIL
N.T.S.

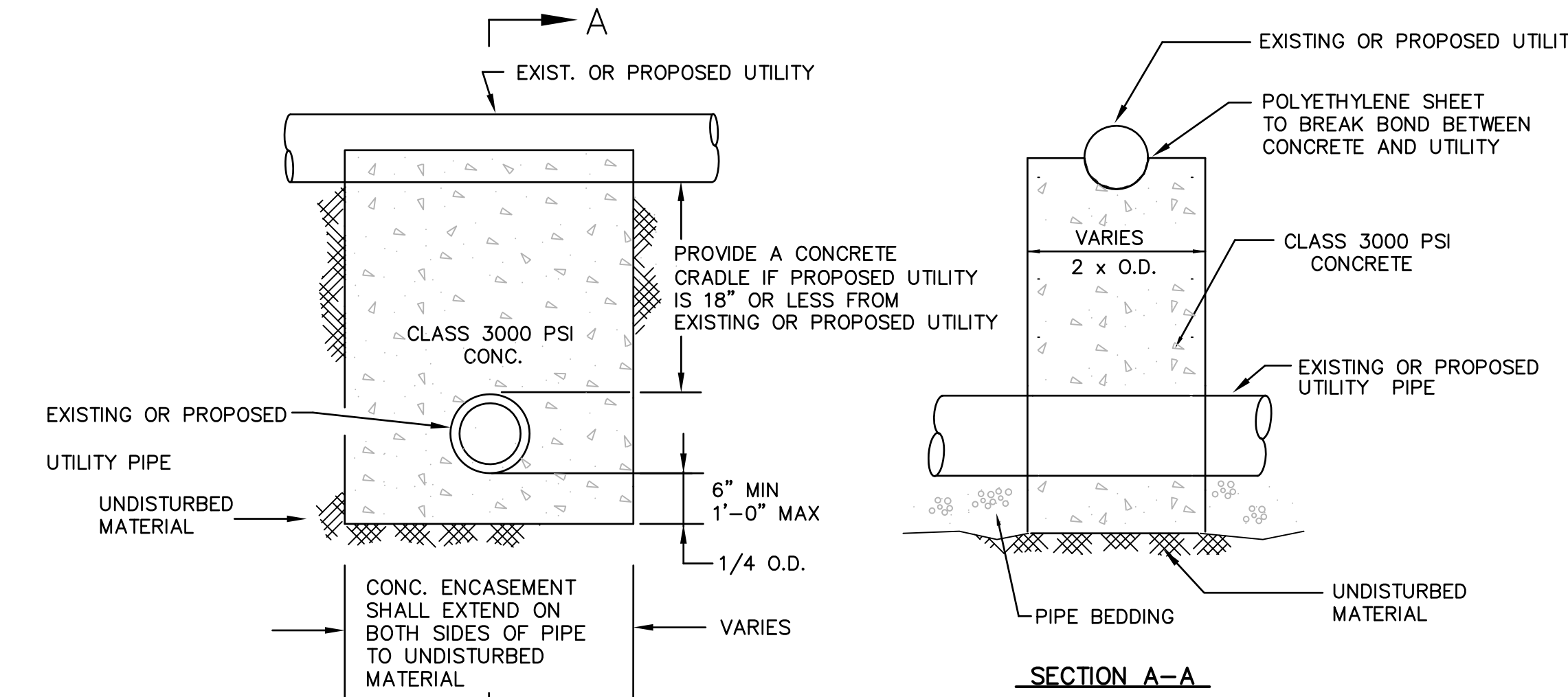


WATER MAIN DIAMETER	MAXIMUM TAP DIAMETER
4"	1/2"
6"	3/4"
8"	1"
12"	1"

* WHERE THE SIZE OF THE CONNECTION EXCEEDS THAT GIVEN IN THE TABLE, A BOSS SHALL BE PROVIDED OR THE TAP SHALL BE MADE BY MEANS OF MULTIPLE CORP. STOPS AND BRANCH FITTINGS, TAPPED TEE, OR TAPPED SADDLE.

NOTES:
1. ALL WATER SERVICES AND CURB STOPS SHALL BE REPLACED UP TO THE RIGHT OF WAY OR AS DIRECTED BY THE ENGINEER. ALL FITTINGS REQUIRED SHALL BE INCLUDED IN THE PRICE OF THE PIPE.
2. ALL NEW WATER SERVICES, CORPORATIONS & CURBSTOPS SHALL BE AS SHOWN ON THE PLANS UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

WATER SERVICE CONNECTION
NTS



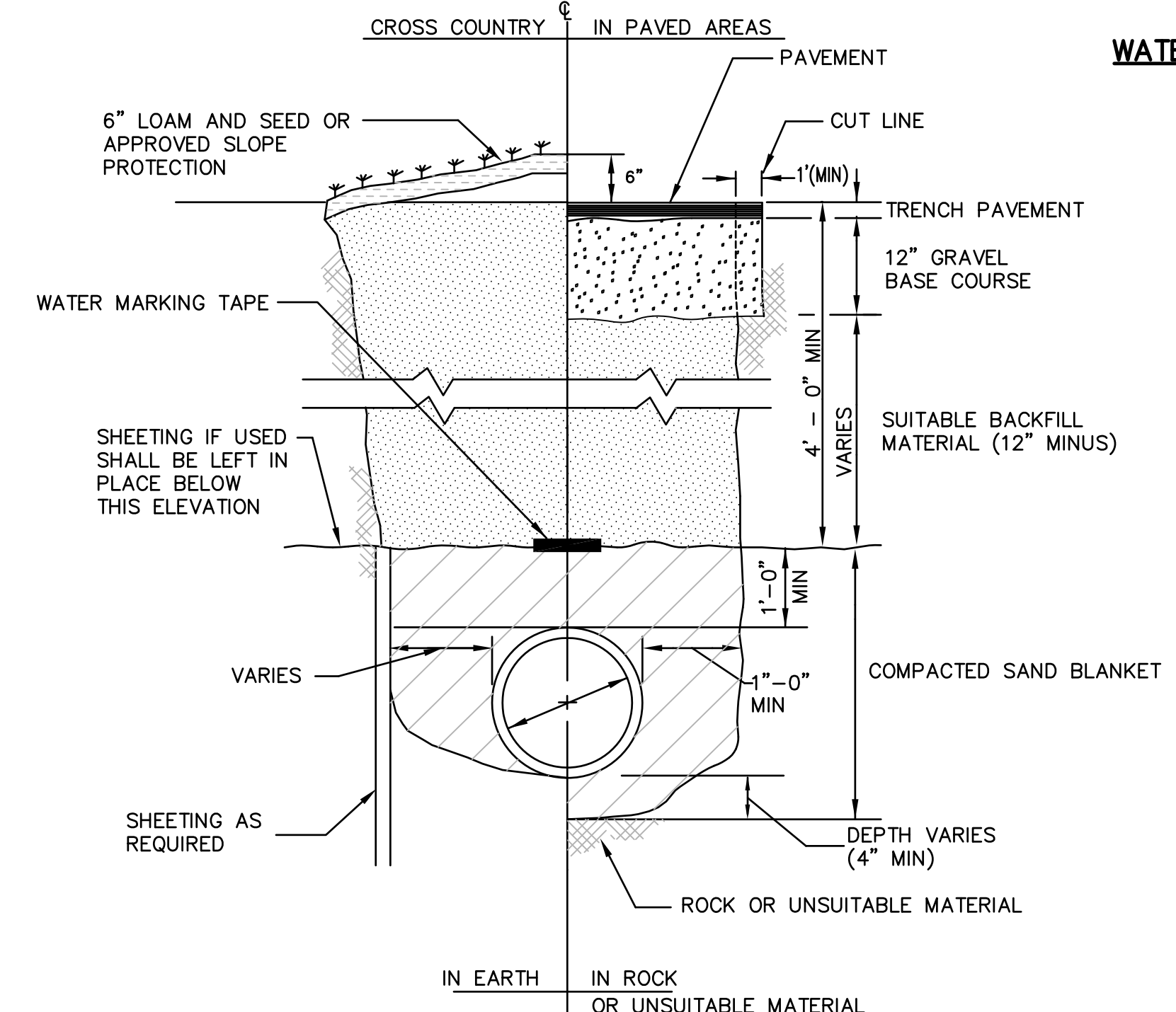
CONCRETE UTILITY SUPPORT
NTS

THRUST BLOCK BEARING AREAS FOR WATER PIPE

TABLE OF BEARING AREAS IN SQ. FT. AGAINST UNDISTURBED MATERIAL FOR WATER MAIN FITTINGS*			
SIZE OF MAIN (IN.)	90° BEND	TEES AND PLUGS	45° BEND
6	4	2.5	2
8	6	4	3
12	12	9	7
16	21	16	12

* TYPE OF SOIL IS MEDIUM CLAYEY, 6 OR MORE BLOWS PER FOOT, OR LOOSE GRANULAR, 9 OR MORE BLOWS PER FOOT. SOIL CONDITIONS OTHER THAN THOSE GIVEN WILL REQUIRE LARGER BEARING AREAS.

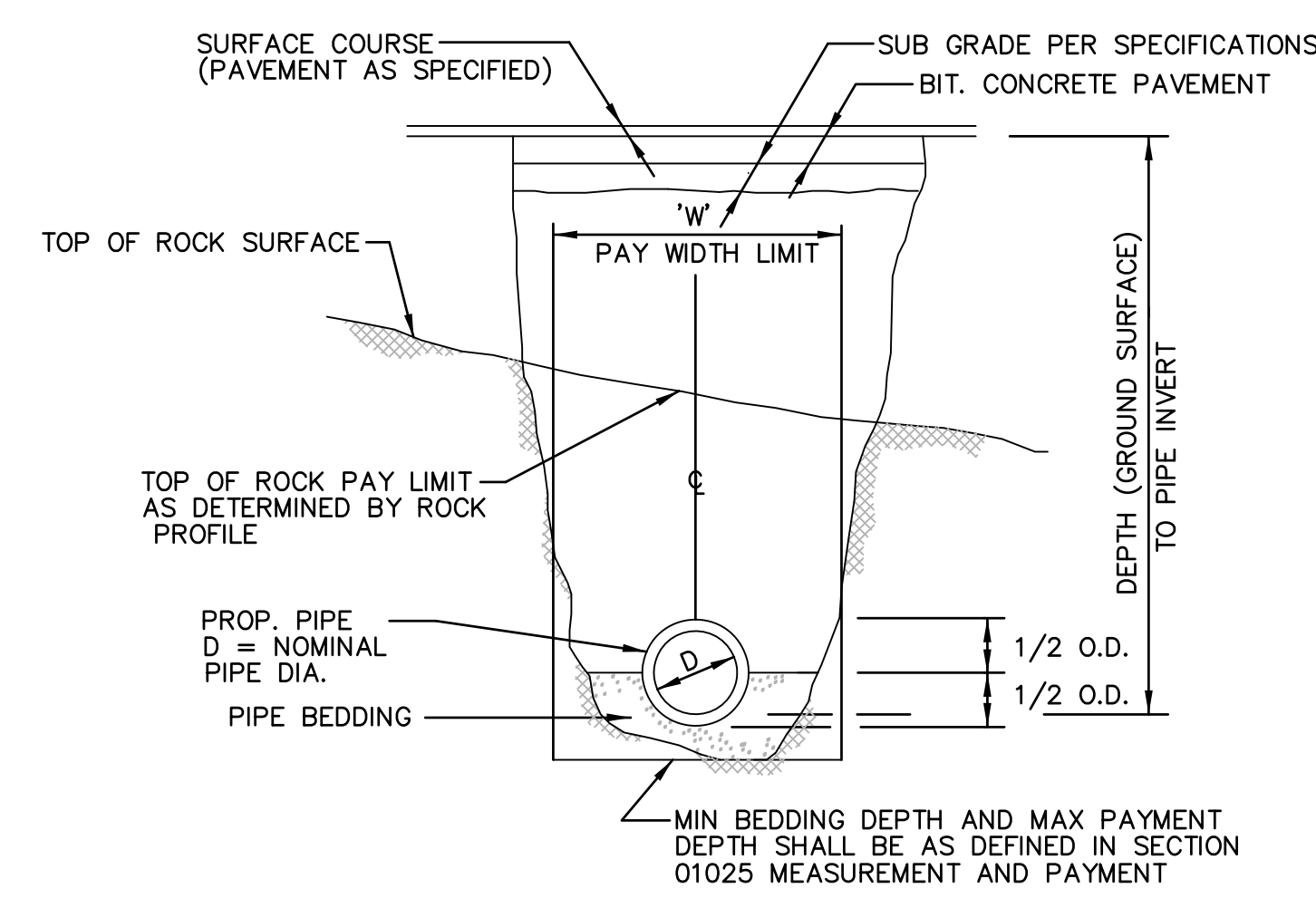
- NOTES:
- FOR FITTINGS WITH LESS THAN 45° DEFLECTION, USE BEARING AREAS FOR 45° BEND.
 - BEARING AREAS BASED ON HORIZONTAL PASSIVE SOIL PRESSURE OF 2000 P.S.F. AND INTERNAL WATER PRESSURE OF 150 P.S.I.G. JOINTS SHALL NOT BE ENCASED IN CONCRETE. BEARING AREAS MAY BE DISREGARDED FOR TRENCHES IN ROCK WHERE 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 THE ROCK FACE.
 - ALL FITTINGS AND VALVES SHALL BE DUCTILE IRON MECHANICAL JOINT AND RESTRAINED WITH MJ RESTRAINTS. (MEGALUG OR EQUAL)
 - WATER MAINS SHALL BE C.L.D.I. CLASS 52 - DOUBLE CEMENT LINED.
 - ALL WORK RELATED TO THRUST BLOCKS SHALL BE PAID FOR UNDER THE CONCRETE ITEM.



NOTES:
ALL TRENCHES SHALL BE SAW CUT. NO OTHER METHOD OF CUTTING THE EXISTING PAVEMENT SHALL BE ACCEPTABLE. THIS WORK SHALL BE PAID FOR UNDER THE ASSOCIATED PIPE ITEM. NO SEPARATE PAYMENTS SHALL BE MADE FOR THIS ITEM.

WATER MARKING TAPE SHALL BE PLACED A MINIMUM OF 1' ABOVE INSTALLED WATER PIPE.

TYPICAL WATER TRENCH DETAIL
N.T.S.



TRENCH IN ROCK PAYMENT LIMITS
N.T.S.

NOTES:
1. THE MAXIMUM PAY LIMIT FOR ROCK REMOVAL OUTSIDE MANHOLES SHALL BE WITHIN A VERTICAL LINE OFFSET ONE FOOT (1') OUTSIDE THE WIDEST DIMENSION OF THE STRUCTURE OR SHALL BE THE MAXIMUM CONNECTING TRENCH WIDTH, WHICHEVER IS GREATER.

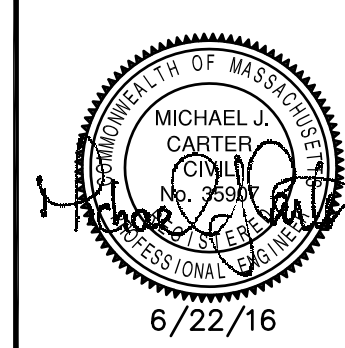
DEPTH FROM GROUND SURFACE TO INVERT OF PIPE	PAY WIDTH 'W' NOMINAL PIPE DIA.	
	0"-24"	OVER 24"
DEPTH ≤ 12'	5'-0"	D+3'-0"
12' < DEPTH < 20'	7'-0"	D+5'
DEPTH > 20'	9'-0"	D+7'

DETAILS I
UTILITY DETAILS
CITY OF WALTHAM, MASSACHUSETTS
BEAR HILL ROAD & SECOND AVENUE
WATER MAIN REPLACEMENT PROJECT

GCG ASSOCIATES, INC.
WILMINGTON MASSACHUSETTS

SCALE: AS NOTED DATE: JUNE 22, 2016

JOB NO. \ FILE NAME: 1604-COVER_DETAILS DESIGNED BY: S.B.H. DRAWN BY: S.B.H. CHECKED BY: M.J.C. PLAN NO. 14 OF 17



EROSION AND SEDIMENT CONTROL MAINTENANCE

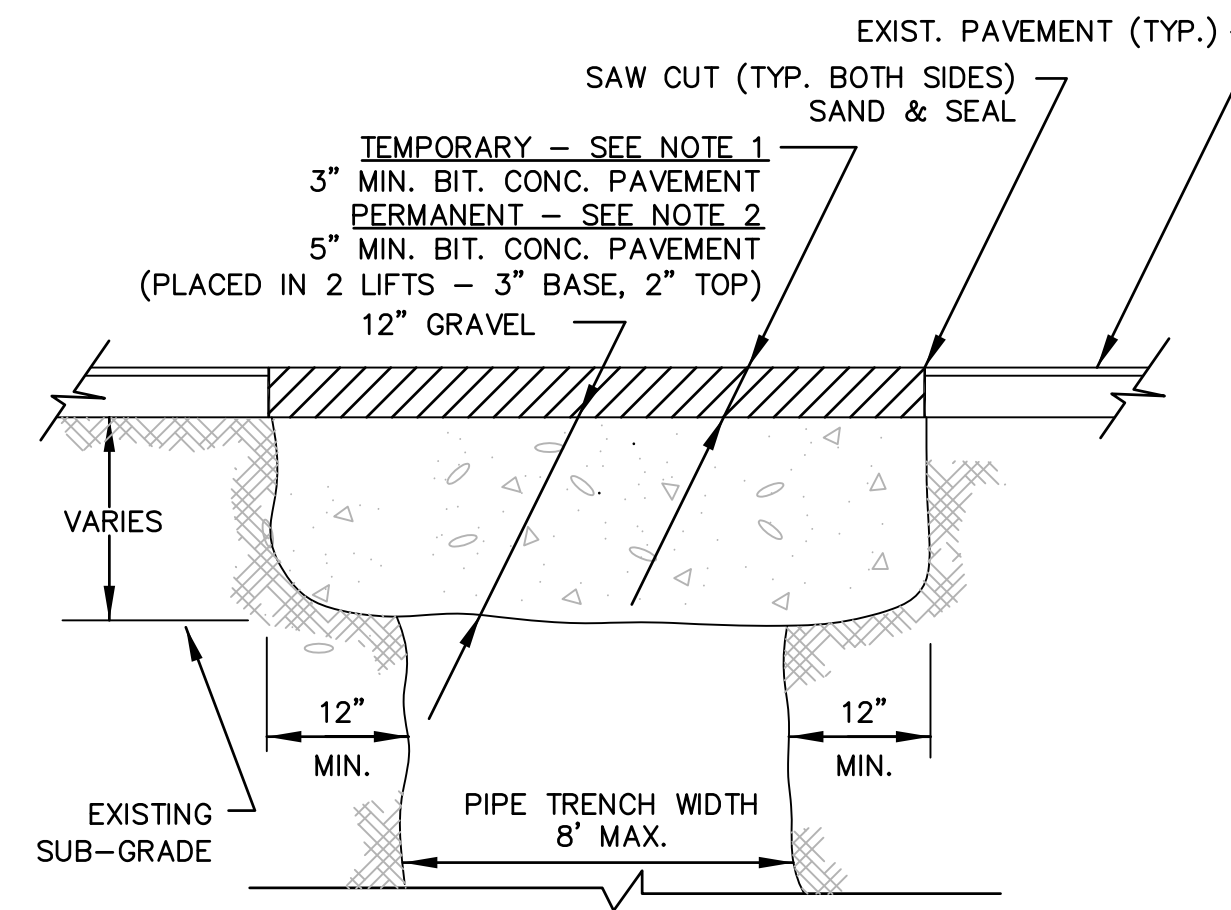
DURING CONSTRUCTION, AS SMALL AN AREA OF SOIL AS POSSIBLE SHOULD BE EXPOSED OR AS SHORT A TIME AS POSSIBLE. AFTER CONSTRUCTION, GRADE, RESPREAD TOPSOIL, AND STABILIZE SOIL BY SEEDING AND MULCHING AS TO PREVENT EROSION.

ALL SEDIMENTATION AND EROSION CONTROL DEVICES SHALL BE INSPECTED DURING CONSTRUCTION ON A DAILY BASIS AND FOLLOWING ALL STORMS BY THE RESIDENT ENGINEER. THE CONTRACTOR SHALL MAINTAIN AND MAKE REPAIRS AND REMOVE SEDIMENT AS REQUESTED BY THE RESIDENT ENGINEER. THIS WORK SHALL BE PERFORMED WITHIN 24 HOURS OF REQUEST.

THE CONTRACTOR SHALL CLEAN SEDIMENT AND DEBRIS FROM ALL DRAINAGE STRUCTURES, AND PIPES AT THE COMPLETION ON CONSTRUCTION, THE CONTRACTOR SHALL REPAIR ALL ERODED AREAS AND ENSURE A GOOD STAND OF TURF IS ESTABLISHED THROUGHOUT. THE CONTRACTOR SHALL REPAIR ALL ERODED OR DISPLACED RIPRAP, AND CLEAN SEDIMENT COVERED STONES.

TRENCHES WITHIN PAVED ROADWAY TO BE CLOSED WITH 3" TEMPORARY PAVEMENT AT THE END OF EACH WORK DAY.

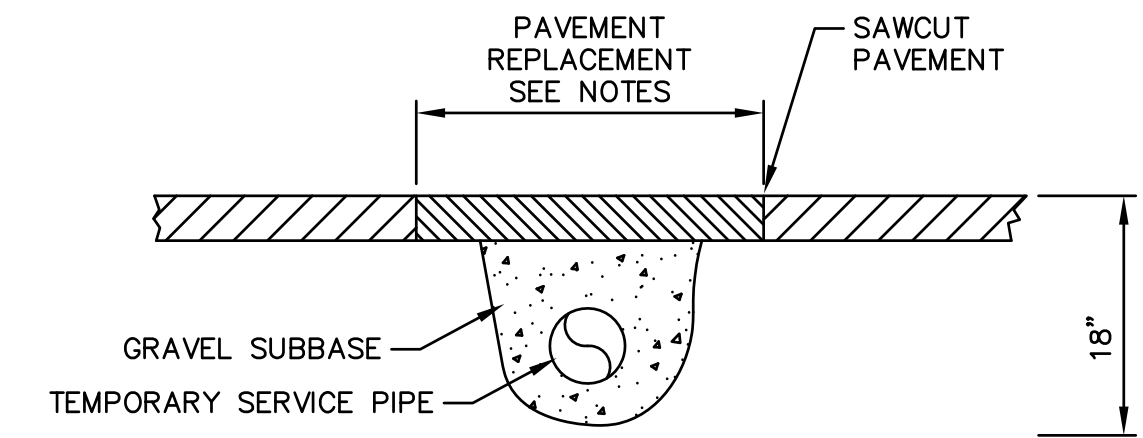
CONTRACTOR TO PERFORM STREET SWEEPING AT THE END OF EACH WORK DAY.



TRENCH DETAIL NOTES:

- TEMPORARY TRENCH PAVEMENT:** 3" TRENCH PAVEMENT TO BE USED AT THE END OF EACH WORK DAY TO STABILIZE TRENCHES. THIS WORK SHALL BE INCLUDED IN THE UNIT PRICE FOR TEMPORARY TRENCH PAVEMENT MEASURED PER LINEAR FOOT OF TRENCH. PRIOR TO PLACING A TEMPORARY TRENCH PAVEMENT AND AFTER WATER PIPE AND GRAVEL BASE IS INSTALLED AS SPECIFIED, THE PREVIOUSLY CUT TRENCHES SHALL BE CLEANED UP. THE CONTRACTOR SHALL INSTALL AND MAINTAIN THE TEMPORARY TRENCH PAVEMENT.
- PERMANENT TRENCH PAVEMENT:** 5" PAVEMENT TO BE PLACED IN TWO LIFTS - 3" BINDER COURSE AND 2" TOP COURSE. THE CONTRACTOR SHALL INSTALL THE PERMANENT TRENCH PAVEMENT AND IT SHALL BE INCLUDED FOR PAYMENT UNDER THE PERMANENT TRENCH PAVEMENT ITEM PER LINEAR FOOT OF TRENCH. TRENCH EDGE SHALL BE CUT BACK A MINIMUM OF 12" PRIOR TO PLACING THE PERMANENT PAVEMENT. ALL EDGES SHALL BE SANDED AND SEALED. PAVEMENT UNDER THE BITUMINOUS TRENCH PAVEMENT ITEM.
- ALL TRENCHES SHALL BE SAWCUT ONLY. NO OTHER METHOD OF CUTTING THE EXISTING PAVEMENT SHALL BE ACCEPTABLE. THIS WORK SHALL BE INCLUDED IN THE ASSOCIATED TRENCH ITEM.

TRENCH PAVEMENT DETAIL (TEMPORARY AND PERMANENT)
N.T.S.

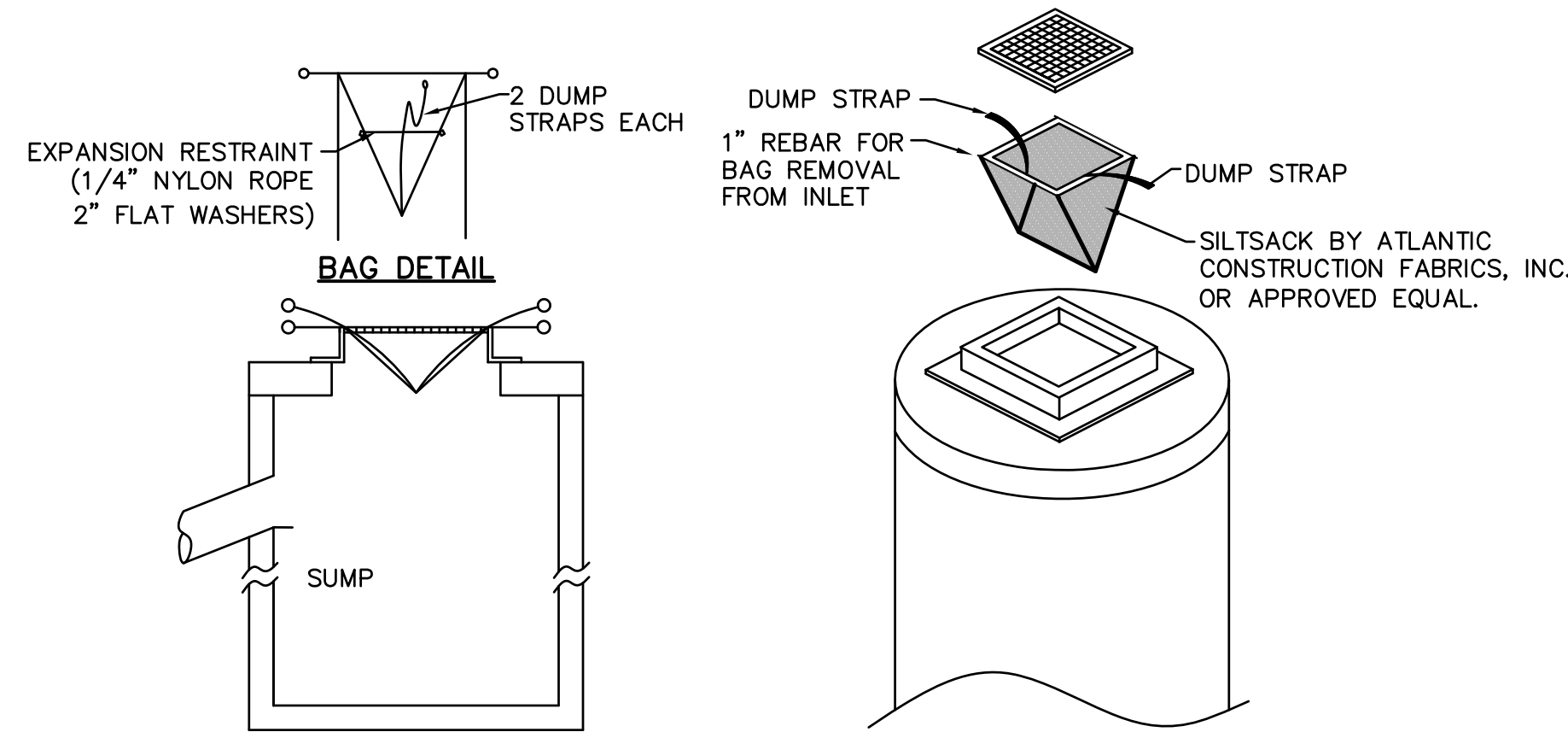


PAVED/ ROADWAY CROSSING

NOTES:

- AT CROSS STREETS AND BUILDING ENTRANCES, PIPING SHALL BE PLACED BELOW PAVING GRADE AND COVERED.
- TEMPORARY PAVEMENT 3" THICK, PERMANENT PAVEMENT 5" PLACED IN TWO (2) LIFTS - 3" BASE, 2" TOP.
- ALL TRENCHES SHALL BE SAW CUT, SANDED AND SEALED.

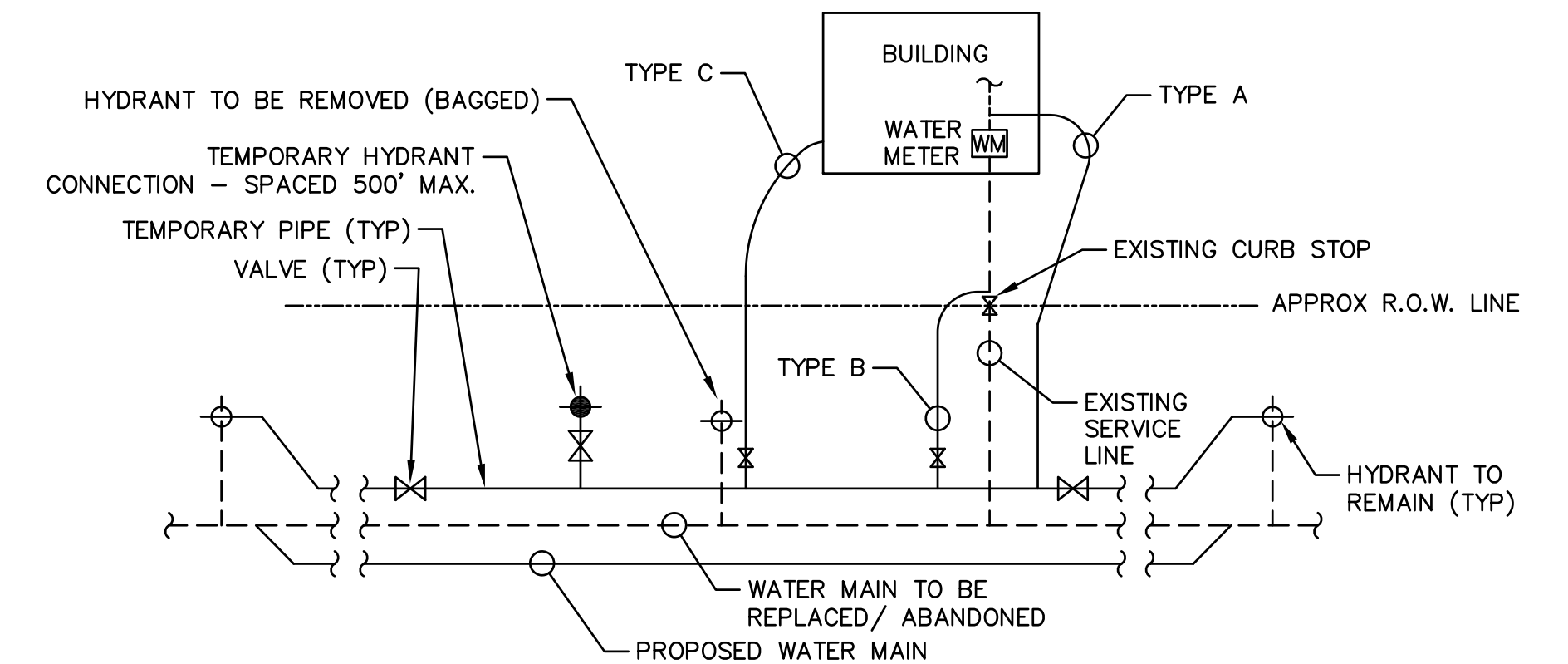
TEMPORARY SERVICE PIPE CROSSING DETAIL
N.T.S.



INSTALLATION DETAIL

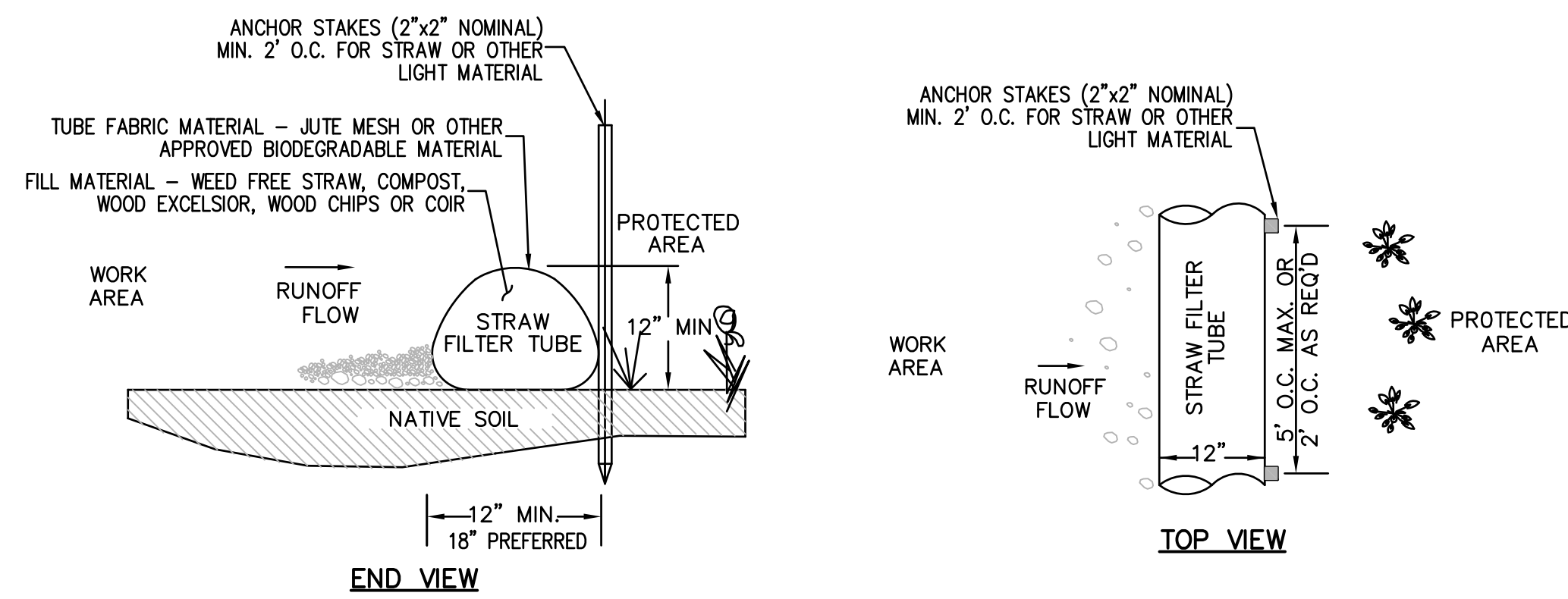
- SILT SACKS SHALL BE INSTALLED IN ALL CATCH BASINS DURING CONSTRUCTION PERIOD.
- INSPECTION SHALL BE WEEKLY AND REPAIR/REPLACEMENT MADE PROMPTLY AS NEEDED.
- SILT SACKS SHALL BE KEPT CLEAN AND FREE OF DEBRIS.

SILTSACK DETAIL
N.T.S.



- CONNECTION TYPE A - TEMPORARY SERVICE WITH METER REMOVED
CONNECTION TYPE B - TEMPORARY SERVICE AT EXISTING CURB STOP
CONNECTION TYPE C - TEMPORARY SERVICE AT OTHER SUITABLE LOCATION

TEMPORARY SERVICE PIPE DETAIL
N.T.S.



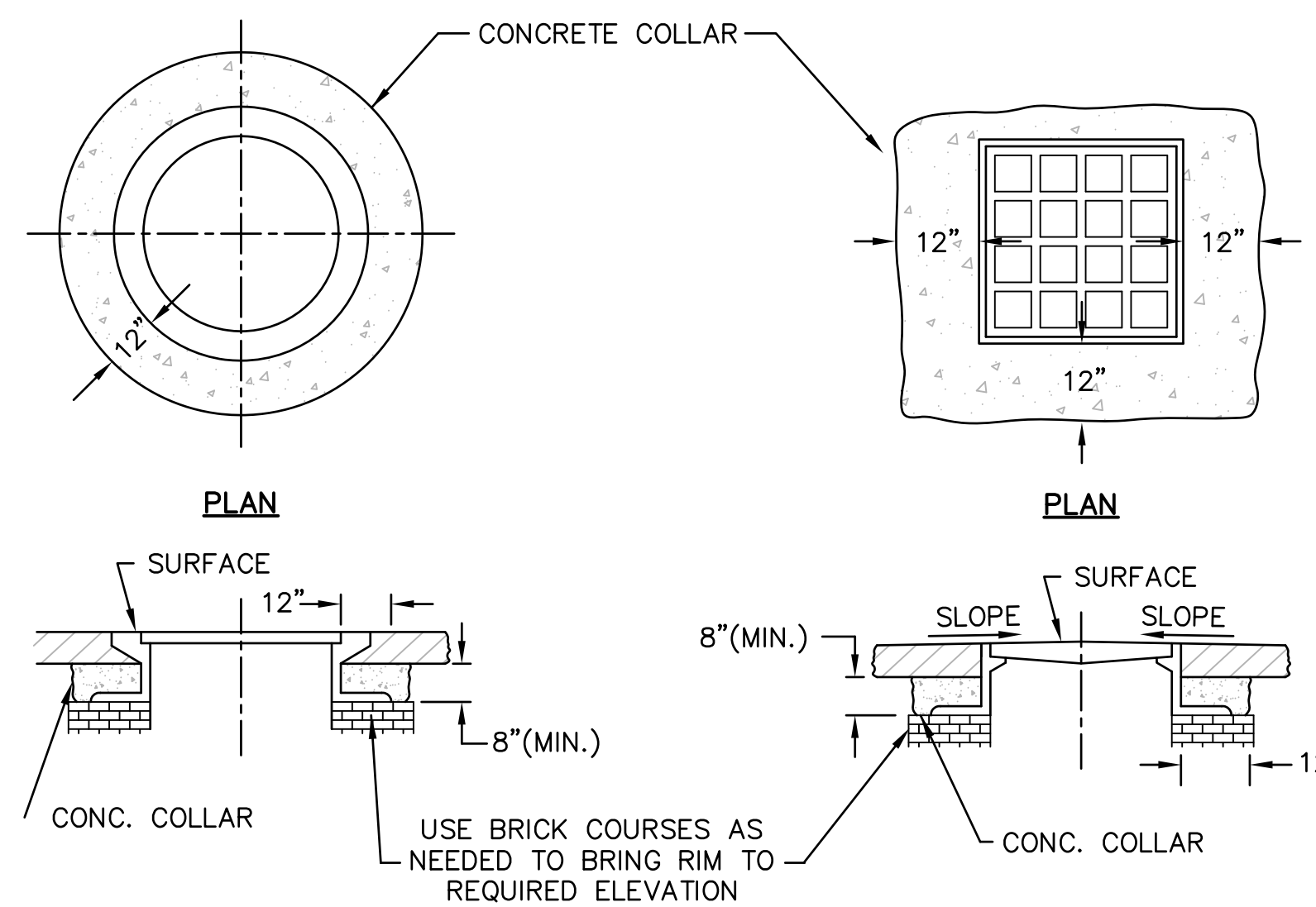
END VIEW

TOP VIEW

NOTES:

- TUBES MAY BE FILLED ON SITE OR SHIPPED.
- ENSURE PROPER LOCATION AT SITE FOR EFFECTIVENESS.
- TUBES SHALL BE PLACED AND STAKED IN PLACE AS REQUIRED TO ENSURE STABILITY AGAINST WATER FLOWS.
- TUBES FILLED WITH LIGHT MATERIAL SHALL BE STAKED AT A MAXIMUM OF 2 FEET ON CENTER. FOR HEAVIER MATERIAL, 5 FEET ON CENTER.
- TUBES SHALL BE TAMPED TO ENSURE GOOD CONTACT WITH SOIL.
- INSPECT AFTER EACH RAINFALL OR DAILY DURING RAINFALL EVENTS. CORRECT ALL DEFICIENCIES IMMEDIATELY.
- FAILURE INCLUDES BUT IS NOT LIMITED TO WASHOUT, OVERTOPPING, CLOGGING, AND EROSION. IF OVERTOPPING OR WASHOUT OCCURS, NEW FILTER TUBES WITH ADDITIONAL STAKING OR STRAW MATERIAL SHALL BE INSTALLED AS DIRECTED BY THE ENGINEER.
- FILTER TUBES SHALL BE REMOVED ONCE SITE WORK IS COMPLETE, SITE IS STABLE, ADEQUATE GROWTH HAS BEEN ESTABLISHED AND AS DIRECTED BY THE ENGINEER. TUBE FABRIC SHALL BE CUT, REMOVED AND DISPOSED OF OFF-SITE BY THE CONTRACTOR AT NO ADDITIONAL COST.

STRAW FILTER TUBE DETAIL
N.T.S.

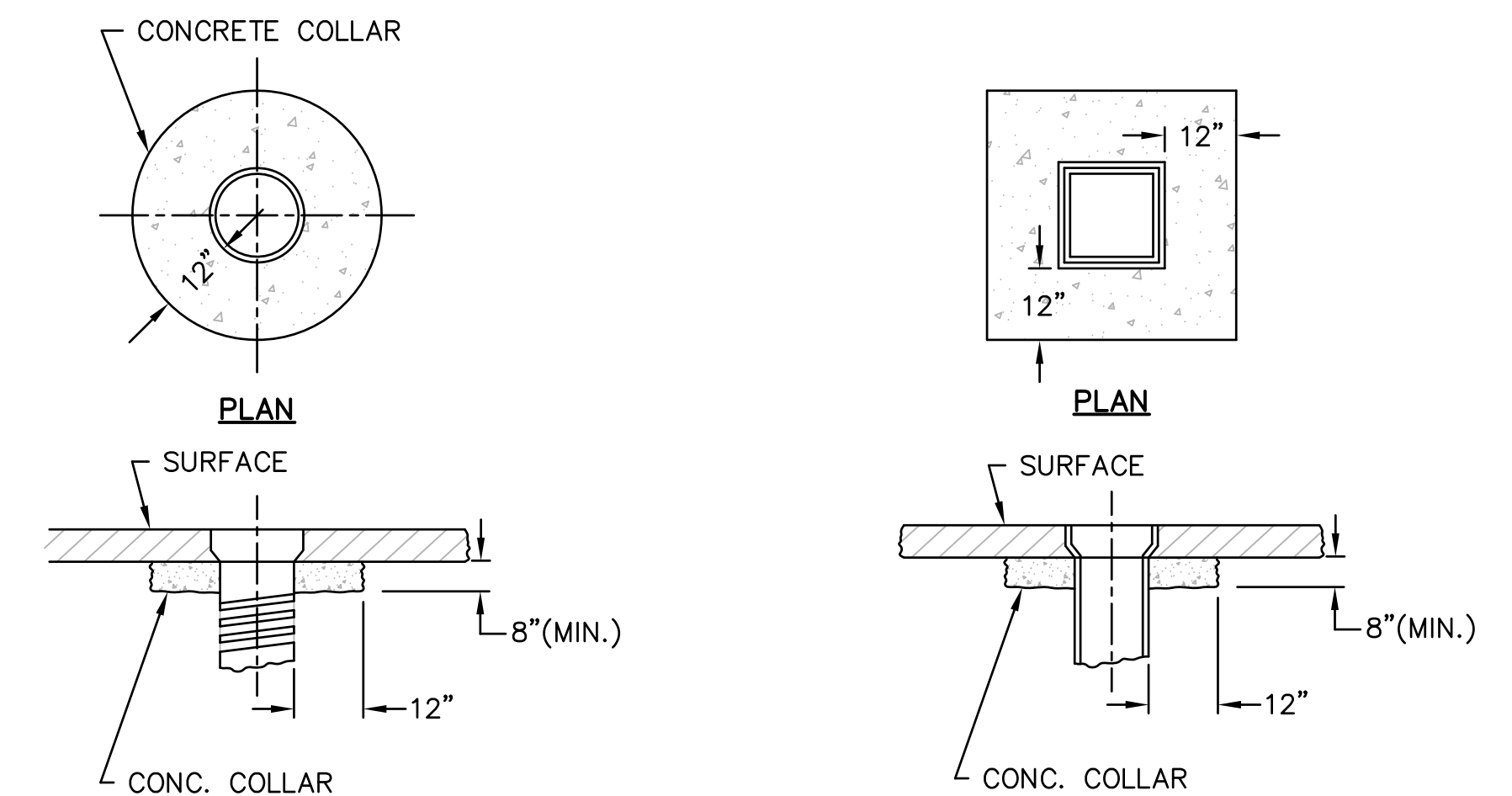


SECTION

MANHOLES

SECTION

CATCH BASINS

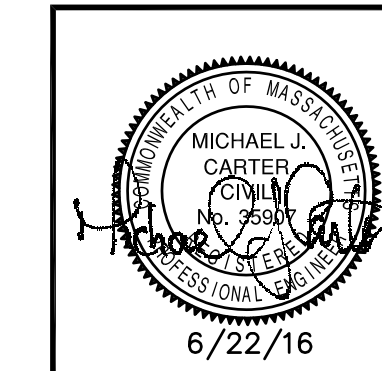


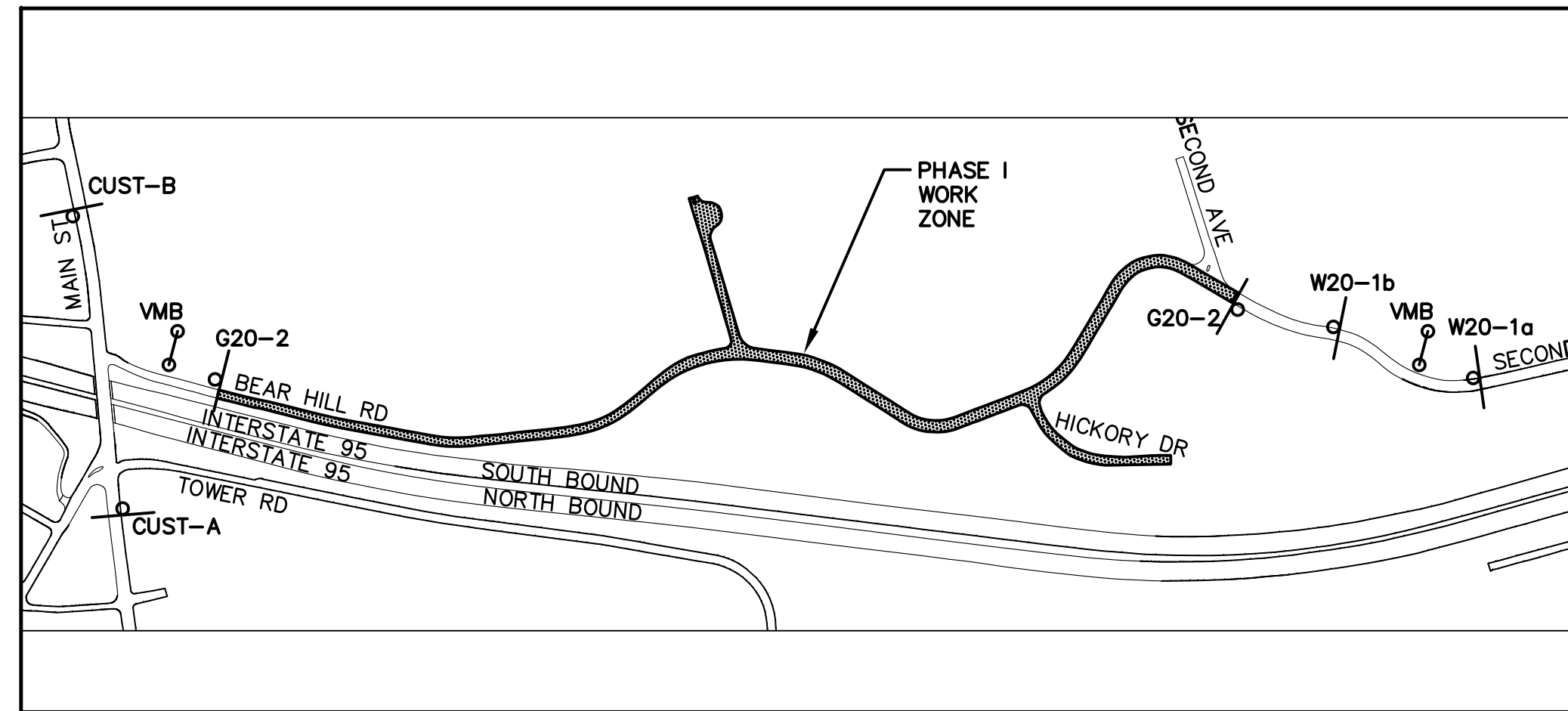
SECTION

WATER SERVICE BOXES

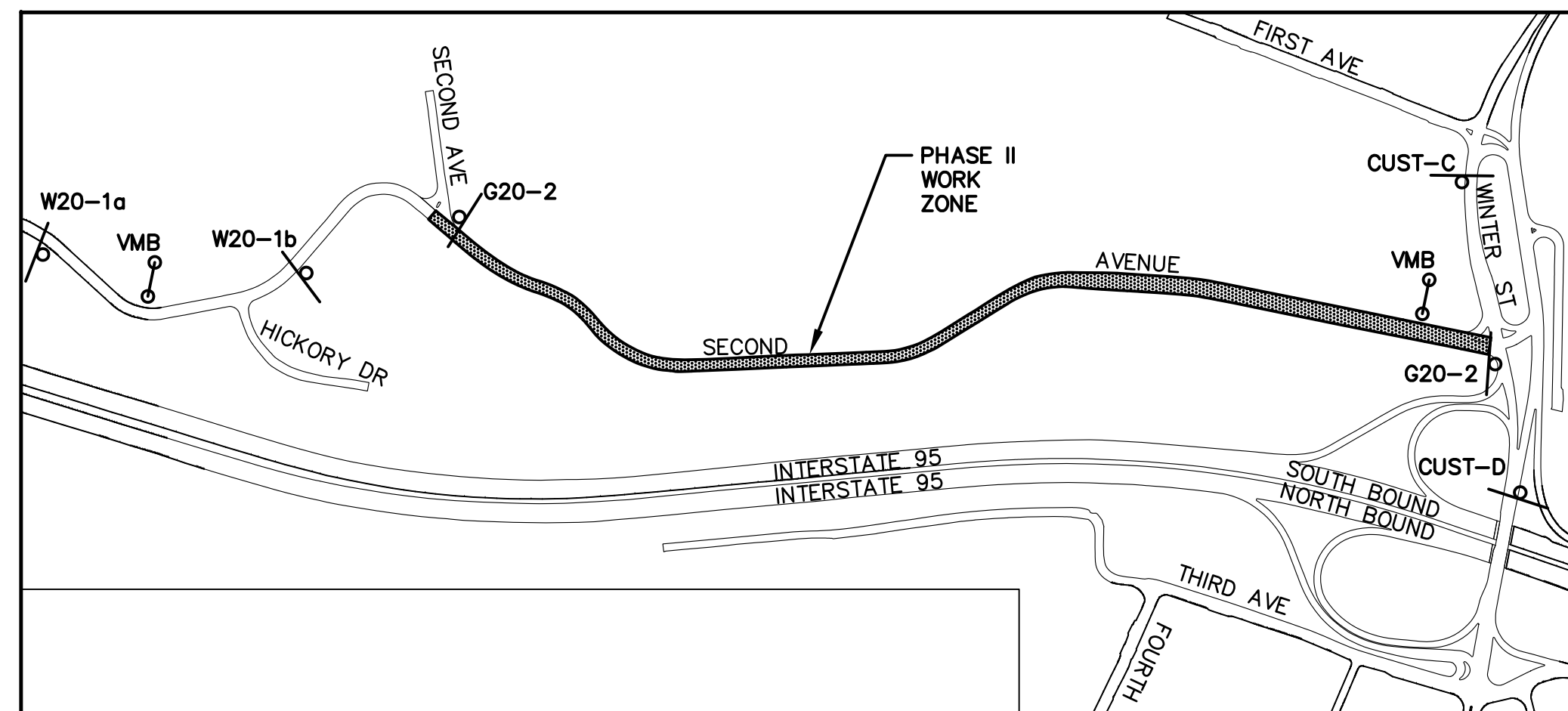
DETAILS FOR RAISING CASTINGS
N.T.S.

DETAILS II
GENERAL DETAILS
CITY OF WALTHAM, MASSACHUSETTS
BEAR HILL ROAD & SECOND AVENUE
WATER MAIN REPLACEMENT PROJECT
GCG ASSOCIATES, INC.
WILMINGTON MASSACHUSETTS
SCALE: AS NOTED DATE: JUNE 22, 2016
JOB NO. \FILE NAME: 1604-COVER_DETAILS DESIGNED BY: S.B.H. DRAWN BY: S.B.H. CHECKED BY: M.J.C. PLAN NO. 15 OF 17
6/22/16





PHASE 1: STATIONARY SIGNAGE PLAN
SCALE 1"=500'



PHASE 2: STATIONARY SIGNAGE PLAN
SCALE 1"=500'

STATIONARY CONSTRUCTION PERIOD SIGNS

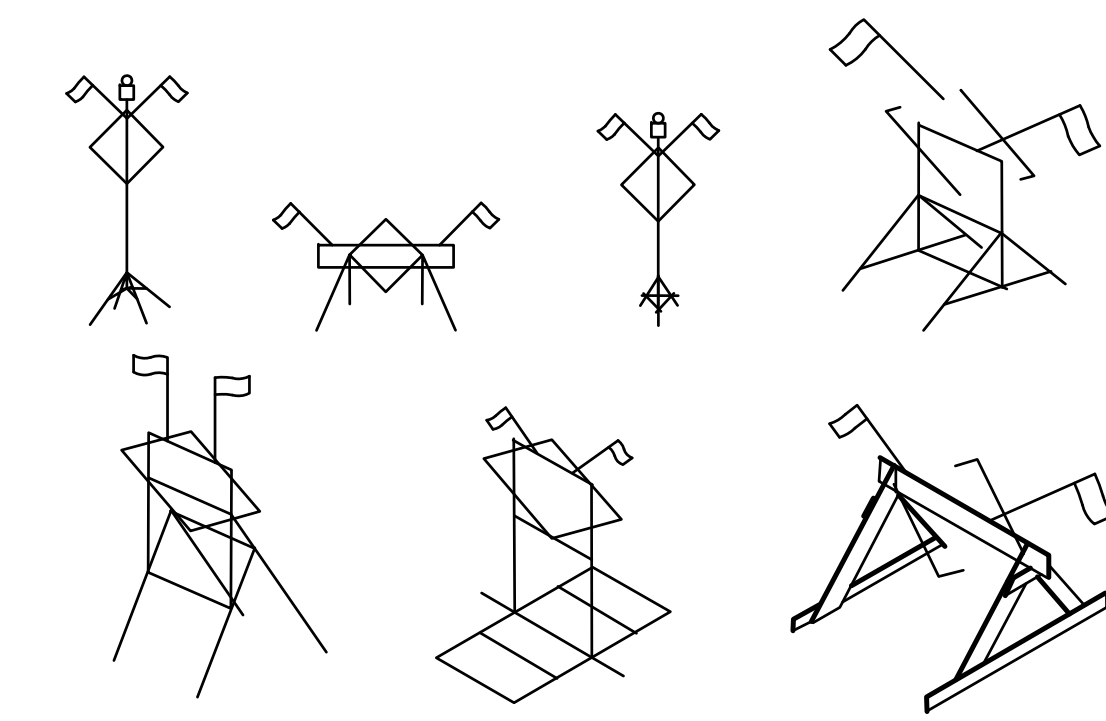
SIGN	WIDTH	HEIGHT
ROAD WORK BEAR HILL RD. CUSTOM-A	48"	48"
ROAD WORK BEAR HILL RD. CUSTOM-B	48"	48"
ROAD WORK SECOND AVE. CUSTOM-C	48"	48"
ROAD WORK SECOND AVE. CUSTOM-D	48"	48"
ROAD CONSTRUCTION 1000 FT. W20-1a	48"	48"
ROAD CONSTRUCTION 500 FT. W20-1b	48"	48"
END CONSTRUCTION G20-2	36"	18"
VARIABLE MESSAGE BOARD VMB		

(REFER TO THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION)

TEMPORARY CONSTRUCTION PERIOD SIGNS

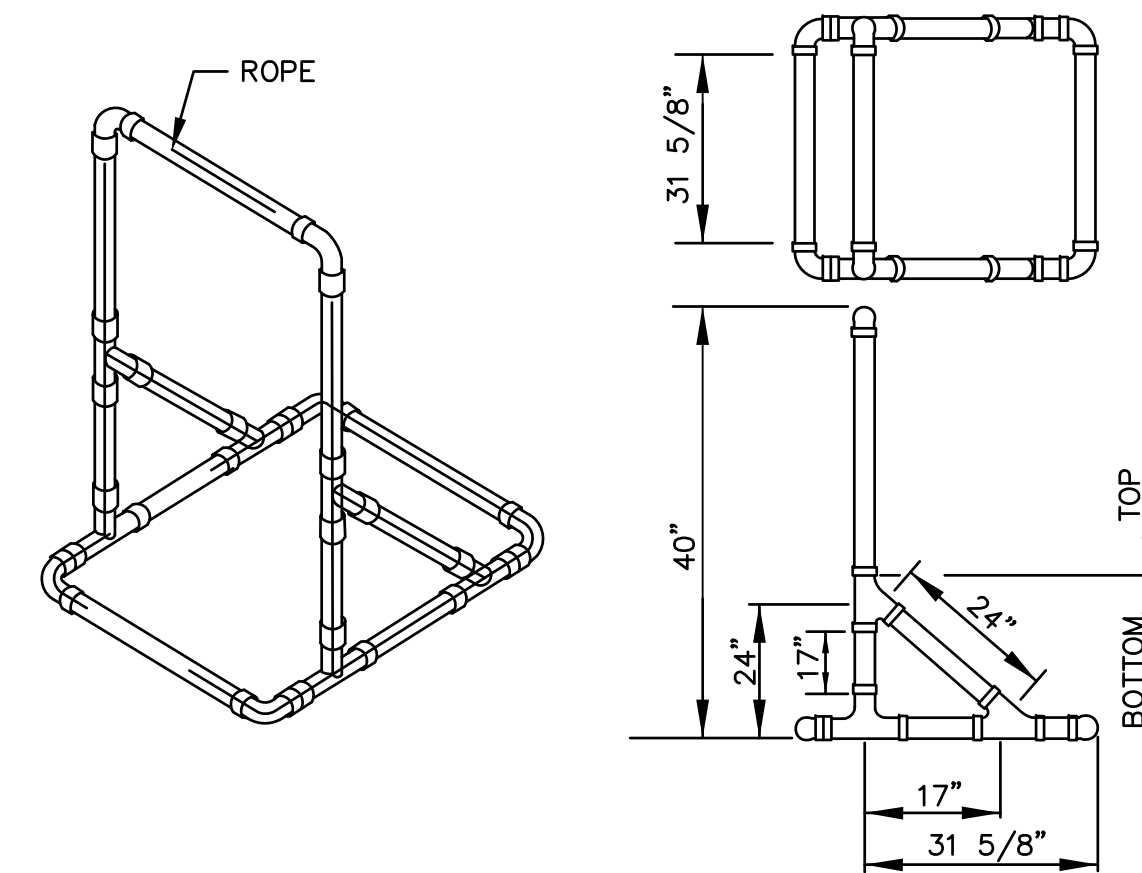
SIGN	WIDTH	HEIGHT
W1-4L	30"	30"
W1-4R	30"	30"
ROAD WORK AHEAD W20-1	36"	36"
ONE LANE ROAD AHEAD W20-4	36"	36"
POLICE OFFICER AHEAD W20-8	36"	36"

(REFER TO THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION)



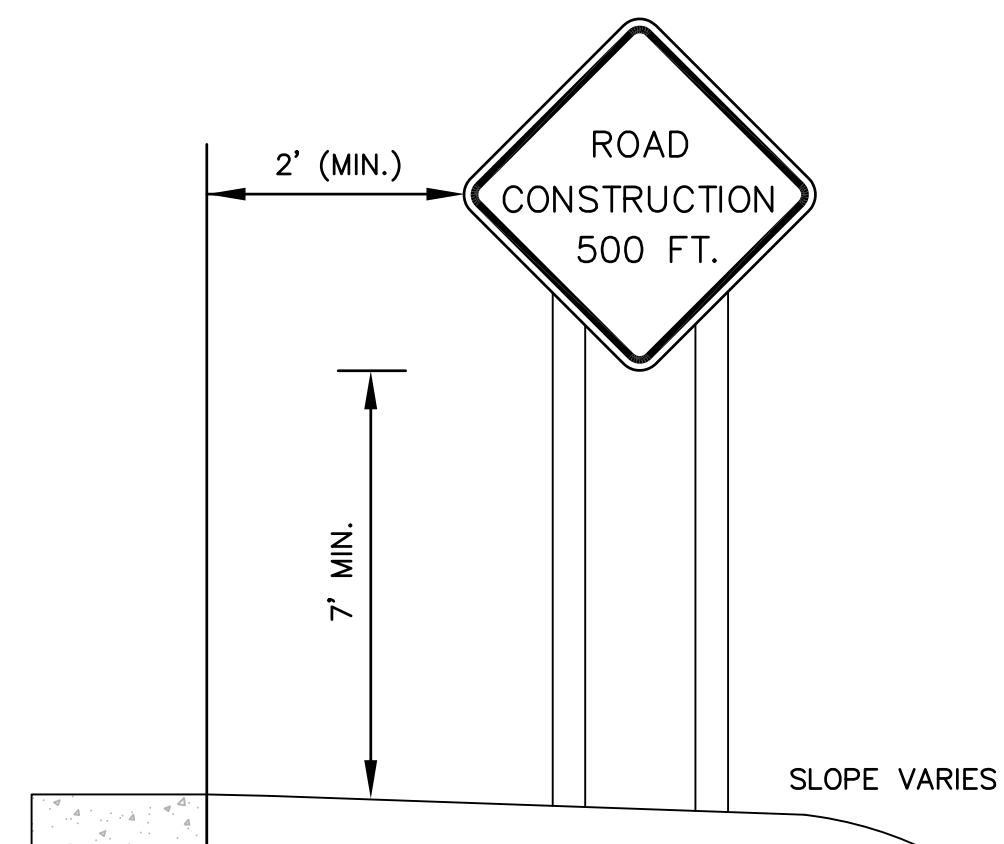
- SIGN SUPPORTS SHALL BE CONSTRUCTED OF A SUITABLE MATERIAL BREAKAWAY AND/OR COLLAPSIBLE FEATURES SHALL BE INCORPORATED IN THE SIGN SO THAT THE SUPPORT WILL NOT CONSTITUTE A HAZARD TO THE MOTORIST AND/OR WORKERS IN THE WORK AREA. SIGNS MUST MEET NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM (NCHRP) 350 STANDARDS AND THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) AND MASSDOT.
- MOUNTING HEIGHT OF SIGN UTILIZING STRUCTURES DEPICTED ABOVE SHALL BE A MINIMUM OF 12", WITH A RECOMMENDED HEIGHT OF 18" ABOVE PAVEMENT.
- THE ENGINEER RESERVES THE RIGHT TO REJECT ANY SUPPORT WHICH THE ENGINEER DEEMS A HAZARD, OR NOT IN THE BEST INTEREST OF THE MOTORING PUBLIC.
- FLAGS AND/OR BARRICADE WARNING LIGHTS SHALL BE USED AS SHOWN ON THE TRAFFIC CONTROL PLANS AND AS REQUIRED BY THE ENGINEER.

TEMPORARY CONSTRUCTION PERIOD PORTABLE SIGN SUPPORTS
N.T.S.



- DIMENSIONS ARE APPROXIMATE.
- BOTTOM SECTION MAY BE FILLED WITH SAND FOR BALLAST.
- SUPPORT SHALL BE LOOSELY THREADED WITH ROPE, KNOTTED AS REQUIRED.

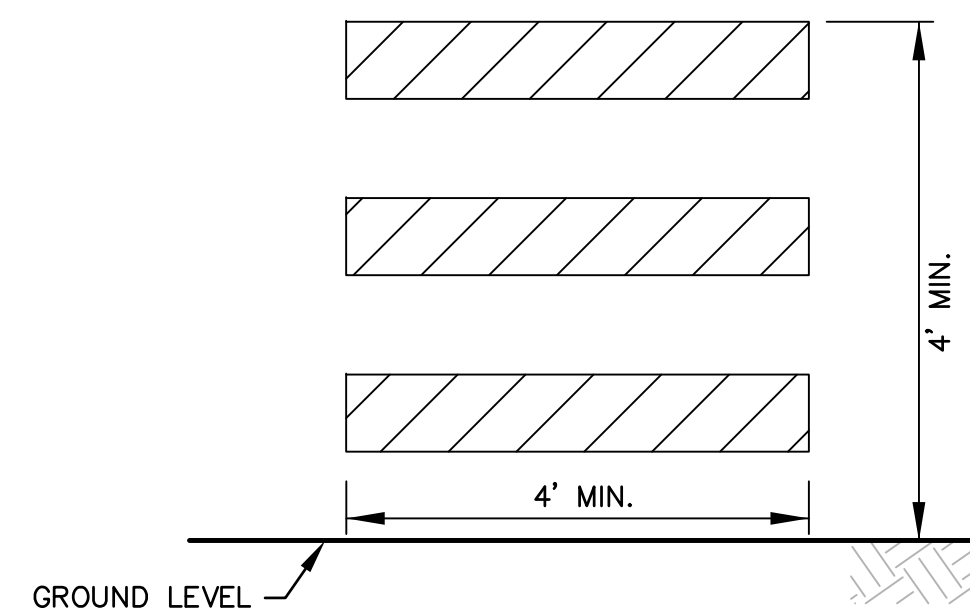
TYPICAL 3" OR 4" PLASTIC SIGN/BARRICADE SUPPORT
N.T.S.



HEIGHT AND LATERAL LOCATIONS OF STATIONARY CONSTRUCTION PERIOD SIGNS
N.T.S.

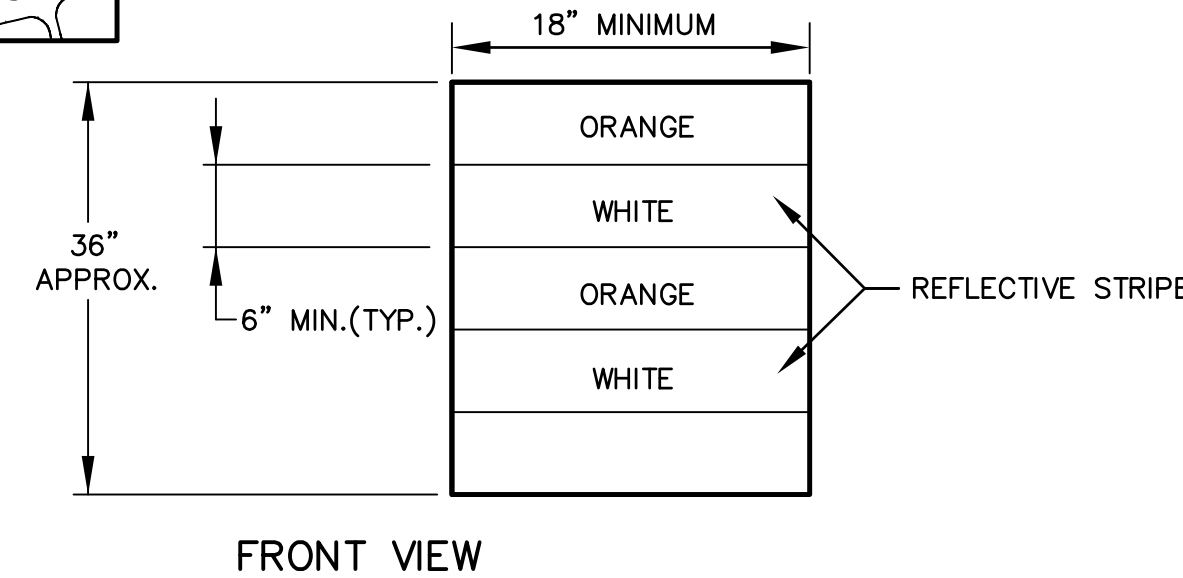
GENERAL NOTES:

- THE TRAFFIC MANAGEMENT SCHEMES ILLUSTRATE PERTINENT TRAFFIC CONTROLS. THE CONTRACTOR SHALL SUBMIT A TRAFFIC MANAGEMENT PLAN (TMP) FOR APPROVAL BY THE TOWN AND ENGINEER. IF DETOURS ARE REQUIRED, THEY SHALL BE INCLUDED IN THE TMP.
- THE TOWN & GCG ASSOCIATES ARE NOT RESPONSIBLE IN ANY WAY FOR THE ENFORCEMENT, LAYOUT OR DESIGN OF THE TMP. POLICE DETAILS SHALL BE USED TO DIRECT TRAFFIC AROUND A WORK AREA IF TRAFFIC MUST BE TEMPORARILY STOPPED OR REDIRECTED TO ALLOW FOR MOVEMENT OF WORK VEHICLES OR OTHER EQUIPMENT.
- ALL TRAFFIC CONTROL TO MEET MASSDOT AND MUTCD (LATEST EDITION).
- CHANNELIZE TRAFFIC AS REQUIRED USING REFLECTORIZED DRUMS AND STEADY-BURN LIGHTS, RELOCATE DRUMS AS REQUIRED DURING CONSTRUCTION. CHANNELIZING DEVICES ARE TO BE EXTENDED TO A POINT WHERE THEY ARE VISIBLE TO APPROACHING TRAFFIC.
- NO SIGNS SHALL BE ATTACHED TO DRUMS OR CONES. ALL SIGNS SHALL BE ATTACHED TO INDEPENDENT SUPPORTS.
- ALL SIGNS SHALL BE REFLECTORIZED OR ILLUMINATED.
- FLASHING WARNING LIGHTS AND/OR FLAGS MAY BE USED ON EARLY WARNING SIGNS AS DIRECTED BY THE ENGINEER.
- CONSTRUCTION ON THIS PROJECT SHALL BE RESTRICTED TO 8 HOURS A DAY OR AS DIRECTED BY THE ENGINEER.
- NIGHT WORK AS COORDINATED WITH THE WATER USERS, CITY OF WALTHAM, AND ENGINEER SHALL UTILIZE WARNING LIGHTS TO MARK CHANNELIZING DEVICES AT NIGHT AS NEEDED.
- OPERATION OF TRAFFIC SIGNAL CONTROLS AT INTERSECTIONS SHOULD BE COORDINATED WITH LOCAL AUTHORITIES.
- PROVIDE POLICE DETAILS TO DIRECT TRAFFIC AS REQUIRED. TRAFFIC CONTROL OFFICERS SHALL BE IN TWO-WAY RADIO COMMUNICATION WITH EACH OTHER AND SHALL BE CLEARLY VISIBLE TO THE TRAFFIC BEING DIRECTED FOR A DISTANCE OF 75 METERS.
- ALL TRAFFIC CONTROL DEVICES SHALL BE REMOVED IMMEDIATELY WHEN NO LONGER NEEDED.
- ACCESS/EGRESS OF ALL DRIVEWAY ENTRANCES AND EXITS SHALL BE MAINTAINED AT ALL TIMES.
- CONTRACTOR SHALL PROVIDE EMERGENCY VEHICLE ACCESS AT ALL TIMES. NO ON-STREET PARKING WILL BE ALLOWED WITHIN THE TRAFFIC CONTROL AREA DURING NORMAL WORKING HOURS.
- NO DETOURING OF TRAFFIC WILL BE ALLOWED WITHOUT WRITTEN CONSENT OF THE ENGINEER AND CITY OF WALTHAM OFFICIALS.
- DISTANCES MAY BE ADJUSTED TO ACCOMMODATE FIELD CONDITIONS, AS DIRECTED BY THE ENGINEER.
- ALL OPEN TRENCHES SHALL BE TEMPORARILY PAVED AT THE END OF EACH WORK DAY. REFER TO PLANS FOR ADDITIONAL INSTRUCTION.
- ADDITIONAL CONSTRUCTION SIGNS MAY BE REQUIRED BY THE ENGINEER OR CITY OF WALTHAM DURING THE COURSE OF CONSTRUCTION.



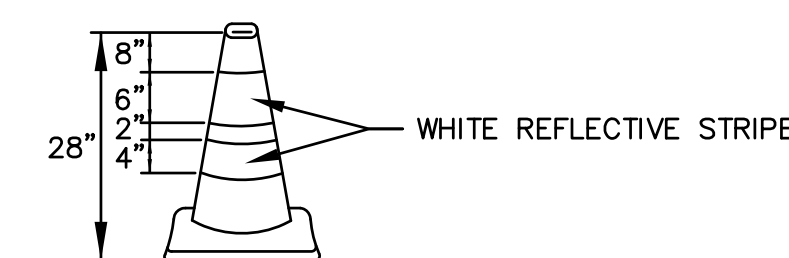
ALUMINUM BARRICADE FACE PANELS
N.T.S.

- ALUMINUM BARRICADE FACE PANELS SHALL BE MOUNTED ON 3" OR 4" P.V.C. BARRICADE SUPPORT.
- MARKINGS FOR BARRICADE FACE PANELS SHALL BE 8" TO 12" IN HEIGHT AND ALTERNATE ORANGE AND WHITE STRIPES SLOPING DOWNWARD IN THE DIRECTION TRAFFIC IS TO PASS. 6" WIDE STRIPES AT A 45 DEGREE ANGLE SHALL BE USED.
- THE ENTIRE AREA OF ORANGE AND WHITE STRIPES SHALL BE REFLECTIVE SHEETING - ENCAPSULATED LENS. BARRICADE FACE PANELS AS NOTED SHALL BE REFLECTORIZED ON BOTH SIDES. WHERE TRAFFIC PASSES ONLY IN ONE DIRECTION OF TRAVEL, ONLY THE SIDE FACING TRAFFIC SHALL BE REFLECTORIZED.
- ALUMINUM BARRICADE FACE PANELS SHALL HAVE ROUNDED CORNERS.
- THE ENGINEER RESERVES THE RIGHT TO REJECT ANY BARRICADE FACE PANEL WHICH THE ENGINEER DEEMS HAZARDOUS, AND NOT IN THE BEST INTEREST OF THE MOTORING PUBLIC, OR NOT SUITABLE FOR PURPOSE INTENDED.



- TRAFFIC DRUM SHALL BE DESIGNED IN ACCORDANCE WITH THE LATEST EDITION M.U.T.C.D.
- THE ENGINEER RESERVES THE RIGHT TO REJECT ANY DRUM DEEMED NOT SUITABLE FOR THE PURPOSE INTENDED.
- THE ENTIRE AREA OF ORANGE AND WHITE STRIPES SHALL BE FLEXIBLE ENCAPSULATED LENS REFLECTIVE SHEETING.
- REFLECTORIZED STRIPES SHOULD NOT BE PLACED OVER THE PROTRUDING CIRCUMFERENTIAL RIBS OF THE DRUM.
- THE SECTIONS OF DRUMS NOT COVERED WITH REFLECTORIZED STRIPES SHALL BE ORANGE.
- THE DESIGN OF THE DRUM REQUIRES A PHOTO ELECTRIC STEADY BURN (TYPE "C") WARNING LIGHT MOUNTED ON TOP.

TRAFFIC DRUM
N.T.S.



- TRAFFIC CONES SHALL BE DESIGN IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, CHAPTER VI, SECTION 6C-3, CONE DESIGN.
- HEIGHT OF THE CONES SHALL BE 28".
- CONES SHALL BE PREDOMINATELY FEDERAL ORANGE IN COLOR AND WITH REFLECTIVE STRIPES.
- RUBBER CONES SHALL HAVE INTERIOR RIBS FOR RIGIDITY.
- PLASTIC CONES SHALL BE COLOR IMPREGNATED.
- CONES SHALL BE OF A THICKNESS NECESSARY TO WITHSTAND IMPACT WITHOUT DAMAGE TO EITHER CONE OR IMPACTING VEHICLE.
- THE ENGINEER RESERVES THE RIGHT TO REJECT ANY CONE THE ENGINEER DEEMS NOT SUITABLE FOR PURPOSE INTENDED.

TRAFFIC CONES
N.T.S.

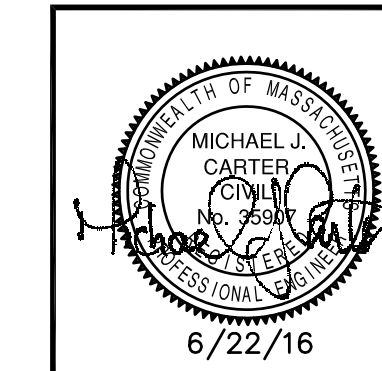
DETAILS III TRAFFIC DETAILS

WATER MAIN REPLACEMENT PROJECT
CITY OF WALTHAM, MASSACHUSETTS
MIDDLESEX COUNTY

GCG ASSOCIATES, INC.

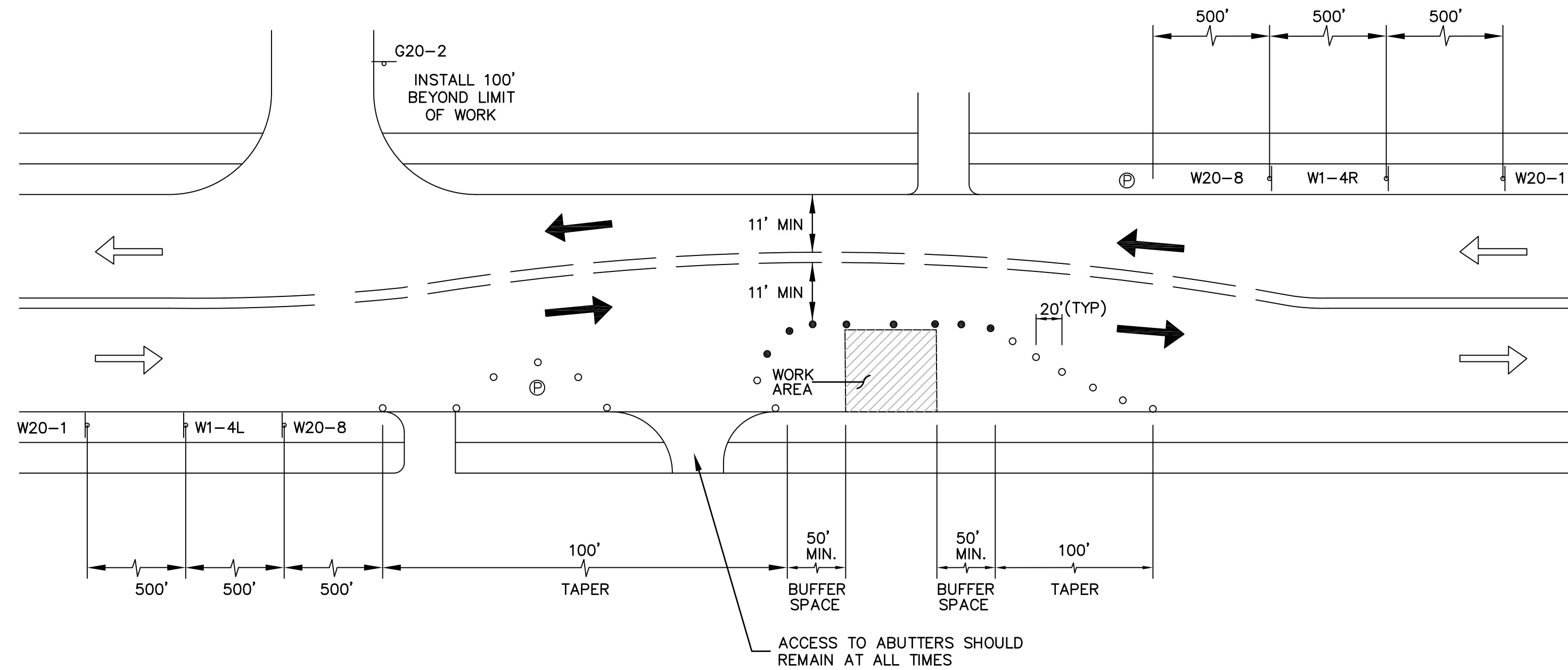
WILMINGTON MASSACHUSETTS

SCALE: AS NOTED DATE: JUNE 22, 2016

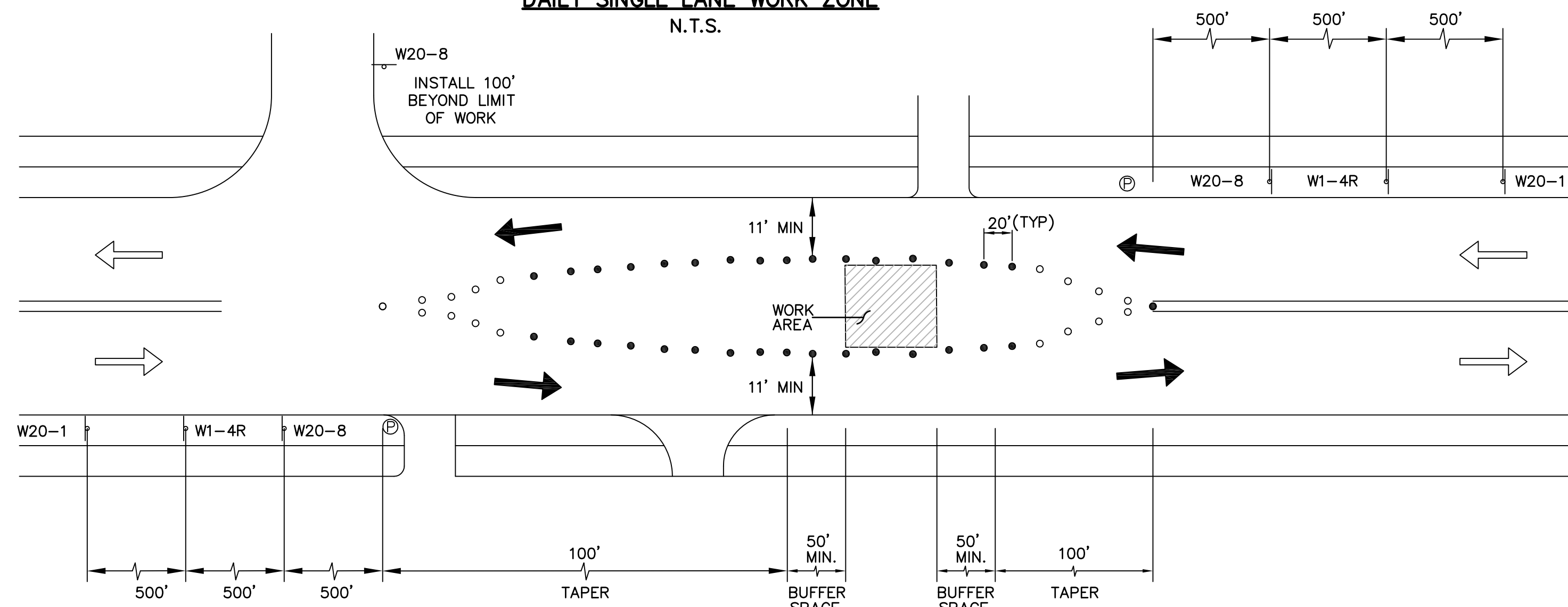


JOB NO. \FILE NAME: 1604-TRAFFIC_DETAILS
DESIGNED BY: S.B.H.
DRAWN BY: S.B.H.
CHECKED BY: M.J.C.

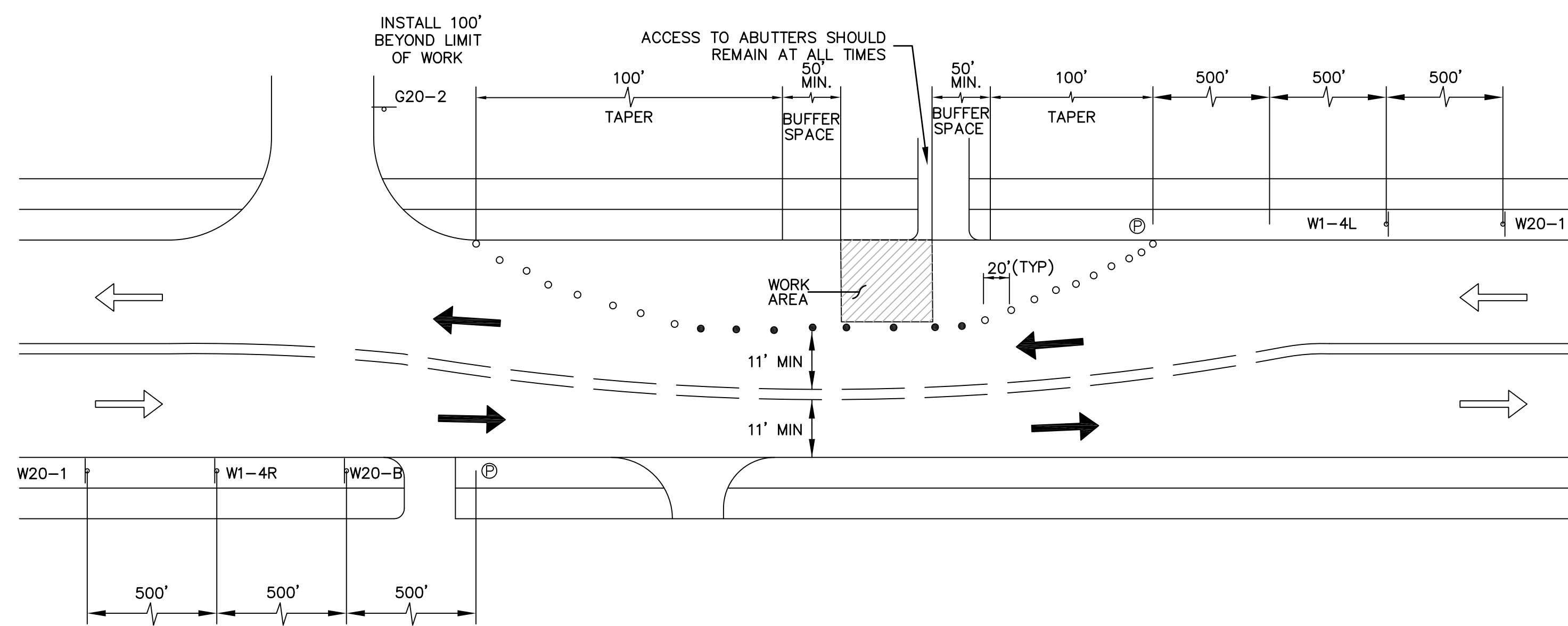
PLAN NO. 16 OF 17



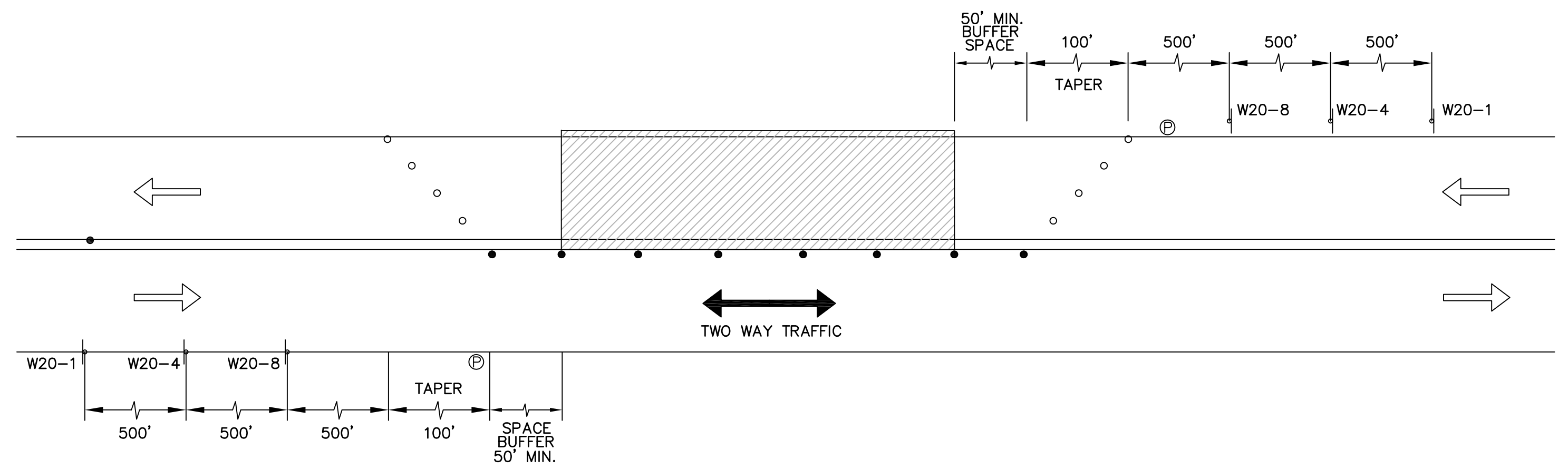
DAILY SINGLE LANE WORK ZONE
N.T.S.



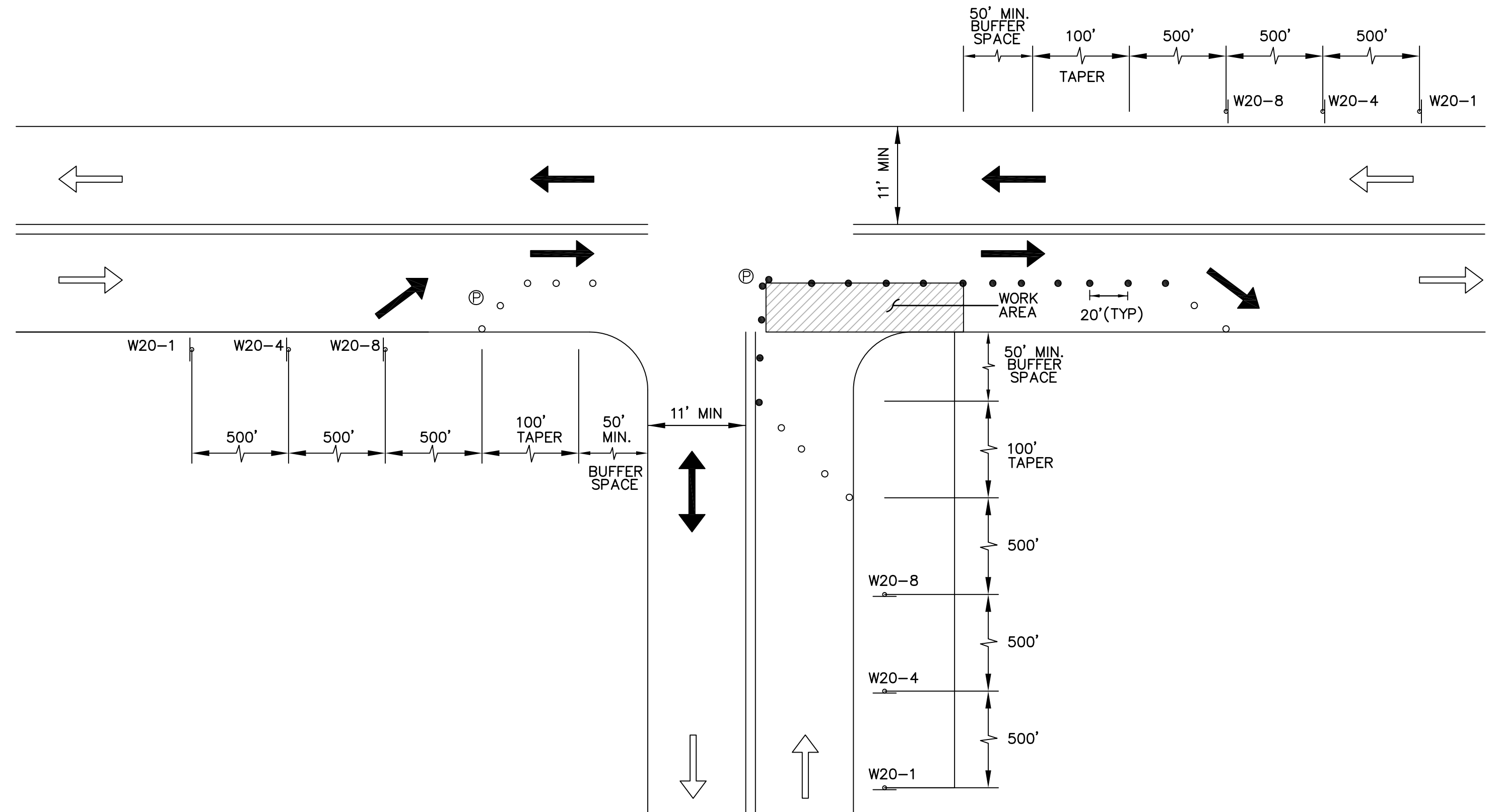
DAILY CENTER ROADWAY WORK ZONE
N.T.S.



DAILY SINGLE LANE WORK ZONE AT DRIVEWAY
N.T.S.

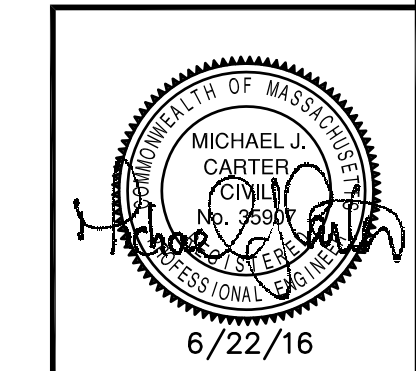


ONE LANE ALTERNATING TRAFFIC DAILY LANE CLOSURE
N.T.S.



"T" INTERSECTION DAILY LANE CLOSURE
N.T.S.

- LEGEND:**
- REFLECTORIZED DRUM
 - REFLECTORIZED TRAFFIC CONE
 - ← TRAFFIC FLOW DURING CONSTRUCTION
 - NORMAL TRAFFIC FLOW
 - Ⓟ POLICE DETAIL OFFICER
 - Ⓜ CONSTRUCTION SIGN
 - ▭ WORK AREA



DETAILS IV		
TRAFFIC DETAILS		
WATER MAIN REPLACEMENT PROJECT CITY OF WALTHAM, MASSACHUSETTS MIDDLESEX COUNTY		
GCG ASSOCIATES, INC.		WILMINGTON MASSACHUSETTS
SCALE: AS NOTED	DATE: JUNE 22, 2016	
JOB NO. \ FILE NAME: 1584-DETAILS-TRAFFIC	DESIGNED BY: M.J.C. DRAWN BY: E.G. CHECKED BY: M.J.C.	PLAN NO. 17 OF 17