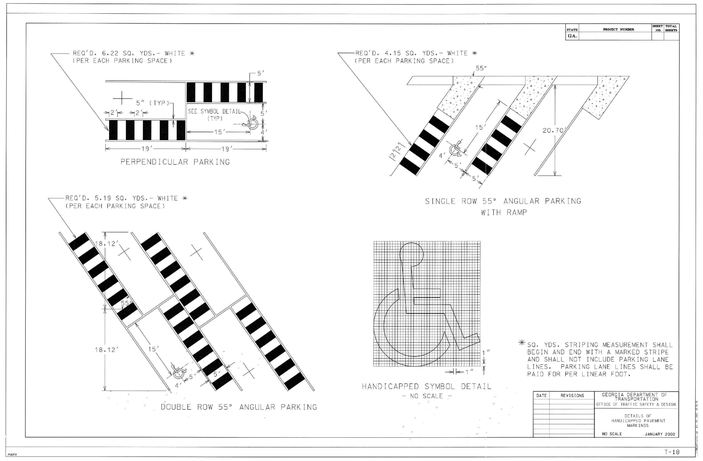
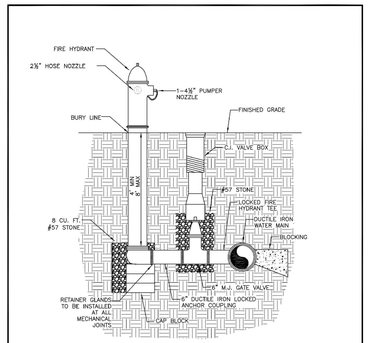
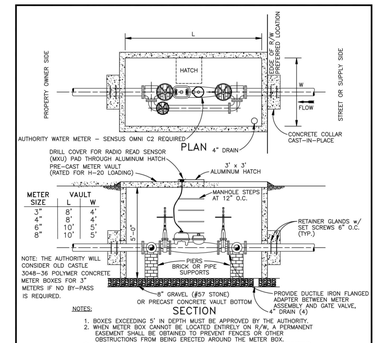




NOTES:
1. 4½" PUMPER NOZZLE TO FACE STREET.
2. VALVE BOX TO BE ADJUSTED TO GRADE.
3. CONCRETE COLLAR AROUND VALVE BOX IF NOT IN PAVED AREA.
4. 8 CU. FT. OF #57 STONE PLACED AROUND HYDRANT DRAIN AND VALVE. MINIMUM DIMENSIONS 24" x 24" x 24".
5. VALVE BOX OPENING SHALL BE 5¼".
6. BLOCKING OF FIRE HYDRANT AND RODDING FROM M.J. TEE TO FIRE HYDRANT IS REQUIRED WHEN ANCHOR COUPLING IS NOT USED.

TYPICAL FIRE HYDRANT ASSEMBLY

Etowah Water & Sewer Authority "Excellence in every drop" | ETOWAH WATER & SEWER AUTHORITY | STANDARD NO. 702 | DATE: MAY 20 | SCALE: NONE



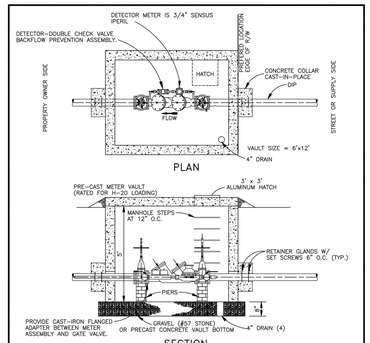
METER SIZE	VAULT L	VAULT W
3"	8'	4'
4"	8'	4'
6"	10'	5'
8"	10'	5'

NOTE: THE AUTHORITY WILL CONSIDER OLD CASTLE 3048-36 POLYMER CONCRETE METER BOXES FOR 3" METERS IF NO BY-PASS IS REQUIRED.

NOTES:
1. BOXES EXCEEDING 5' IN DEPTH MUST BE APPROVED BY THE AUTHORITY.
2. WHEN METER BOX CANNOT BE LOCATED ENTIRELY ON R/W, A PERMANENT EASEMENT SHALL BE OBTAINED TO PREVENT FENCES OR OTHER OBSTRUCTIONS FROM BEING ERECTED AROUND THE METER BOX.
3. COVER OPENING & STEPS TO BE PLACED NEAREST THE METER REGISTER.
4. ALL VALVES AND FITTINGS INSIDE THE VAULT SHALL BE FLANGED.
5. THE METER MUST BE INSTALLED WITH AT LEAST 8 DIAMETERS OF STRAIGHT PIPE SAME SIZE AS METER ON THE INLET SIDE TO PERMIT ON-SITE MAINTENANCE AND CALIBRATION. AN INLET AND OUTLET GATE VALVE WITH BYPASS LINE ARE REQUIRED (SEE ILLUSTRATION).
6. THESE VAULTS ARE NOT TO BE INSTALLED IN TRAFFIC AREAS WITHOUT PRIOR APPROVAL OF THE AUTHORITY.
7. DOUBLE CHECK BACK FLOW PREVENTION REQUIRED ON PROPERTY OWNER'S SIDE OF METER. LOCATION SHALL BE APPROVED BY THE AUTHORITY.
8. ALL FITTINGS OUTSIDE THE VAULT SHALL BE MECHANICAL JOINTS.
9. ALL FITTINGS OUTSIDE THE VAULT SHALL BE MECHANICAL JOINT WITH RETAINER GLANDS.
10. THE BYPASS SHALL BE INSTALLED INSIDE THE METER VAULT.

SENSUS OMNI C2 METERS AND VAULT

Etowah Water & Sewer Authority "Excellence in every drop" | ETOWAH WATER & SEWER AUTHORITY | STANDARD NO. 705 | DATE: MAY 20 | SCALE: NONE



NOTES:
1. BOXES EXCEEDING 5' IN DEPTH MUST BE APPROVED BY THE AUTHORITY.
2. VAULT SHOULD BE LOCATED ENTIRELY OFF R/W ON PRIVATE PROPERTY.
3. THESE VAULTS ARE NOT TO BE INSTALLED IN TRAFFIC AREAS WITHOUT PRIOR PERMISSION FROM THE AUTHORITY.
4. ALL VALVES AND FITTINGS INSIDE THE VAULT SHALL BE FLANGED.
5. DOUBLE DETECTOR CHECK ARE TO BE INSTALLED PER THE AUTHORITY'S BACKFLOW PREVENTION PROGRAM SPECIFICATIONS, LATEST EDITION.
6. DOUBLE DETECTOR CHECK'S 4" AND LARGER SHALL BE INSTALLED IN A VAULT. THE AUTHORITY WILL CONSIDER OLD CASTLE 3048-36 POLYMER CONCRETE METER BOXES FOR 3" AND SMALLER DOUBLE DEFECTOR CHECK ASSEMBLIES.

DOUBLE DETECTOR CHECK VAULT

Etowah Water & Sewer Authority "Excellence in every drop" | ETOWAH WATER & SEWER AUTHORITY | STANDARD NO. 706 | DATE: MAY 20 | SCALE: NONE

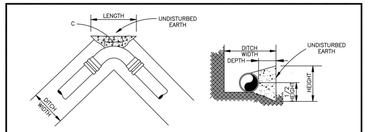


TABLE FOR CONCRETE BLOCKING
(250 PSI TEST PRESSURE)

MINIMUM DIMENSIONS OF BLOCKING

FITTING	SIZE	DEPTH (FT.)	LENGTH (FT.)	"C" (IN.)	HEIGHT (FT.)	VOLUME (C.Y.)	THRUST (LB.)
11 1/4° BEND	6"	1.0	2.0	6	1.0	0.04	1,385
11 1/4° BEND	8"	1.0	2.0	7	1.0	0.05	2,465
11 1/4° BEND	10"	1.0	2.0	9	1.0	0.07	3,850
11 1/4° BEND	12"	1.0	2.5	11	1.5	0.12	5,550
11 1/4° BEND	16"	2.0	3.5	12	2.1	0.28	9,860
11 1/4° BEND	18"	2.0	4.5	15	2.5	0.46	15,400
11 1/4° BEND	24"	2.0	4.0	18	3.0	0.70	22,185
22 1/2° BEND	6"	1.0	2.0	6	1.0	0.04	2,760
22 1/2° BEND	8"	1.0	2.0	7	1.5	0.06	4,905
22 1/2° BEND	10"	1.0	3.0	9	2.0	0.10	7,660
22 1/2° BEND	12"	1.0	3.0	11	2.0	0.16	11,040
22 1/2° BEND	16"	2.0	3.5	12	3.0	0.45	19,625
22 1/2° BEND	20"	2.0	4.0	15	4.0	0.74	30,665
22 1/2° BEND	24"	3.0	5.0	18	4.5	1.47	44,160
45° BEND	6"	1.0	2.0	6	1.5	0.06	5,415
45° BEND	8"	1.0	2.5	7	2.0	0.10	9,625
45° BEND	10"	2.0	3.5	9	2.5	0.31	15,040
45° BEND	12"	2.0	3.5	11	3.0	0.41	21,655
45° BEND	16"	3.0	5.0	12	4.0	1.45	38,495
45° BEND	20"	4.0	6.0	15	5.0	2.05	60,145
45° BEND	24"	4.0	7.5	18	6.5	3.35	91,610
90° BEND	6"	1.0	2.5	12	2.0	0.13	10,005
90° BEND	8"	2.0	3.0	14	3.0	0.38	17,785
90° BEND	10"	2.5	4.5	18	3.0	0.74	27,785
90° BEND	12"	3.0	5.0	20	4.0	1.24	40,000
90° BEND	16"	4.0	6.0	26	5.5	2.84	71,125
90° BEND	20"	4.0	8.0	32	7.0	4.68	111,135
90° BEND	24"	5.0	10.0	40	8.0	8.50	160,035

NOTES:
1. SOIL BEARING STRENGTH OF 2000 PSF IS ASSUMED IN THE CALCULATIONS ABOVE. ENGINEER SHALL VERIFY.
2. COVER GLANDS AND BOLTS WITH POLYETHYLENE BEFORE PLACING CONCRETE.
3. ALLOW CONCRETE TO SET UP A MINIMUM OF 4 HOURS BEFORE PLACING BACKFILL.
4. CONCRETE SHALL BE 3000 PSI, CLASS A.
5. ALL FITTINGS SHALL BE DUCTILE IRON AND BE BLOCKED AND SUPPORTED AS SHOWN ABOVE.
6. VERTICAL BENDS WITH AN UPWARD THRUST SHALL BE RESTRAINED AS SHOWN IN STANDARD 711.
7. VERTICAL BENDS WITH A DOWNWARD THRUST SHALL BE RESTRAINED AS SHOWN IN STANDARD 712.

CONCRETE BLOCKING FOR BENDS

Etowah Water & Sewer Authority "Excellence in every drop" | ETOWAH WATER & SEWER AUTHORITY | STANDARD NO. 708 | DATE: MAY 20 | SCALE: NONE

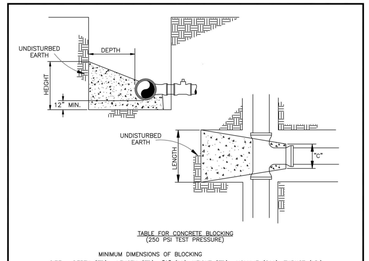


TABLE FOR CONCRETE BLOCKING
(250 PSI TEST PRESSURE)

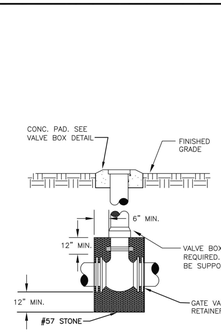
MINIMUM DIMENSIONS OF BLOCKING

SIZE	DEPTH (FT.)	LENGTH (FT.)	"C" (IN.)	HEIGHT (FT.)	VOLUME (C.Y.)	THRUST (LB.)
6"	1.0	2.5	12	1.5	0.10	7,070
8"	1.7	3.25	14	2.0	0.27	12,565
10"	2.0	4.0	18	2.5	0.50	19,635
12"	2.5	4.5	20	3.25	0.91	28,275
16"	3.5	5.0	26	5.0	1.77	50,265
20"	4.0	7.0	32	5.75	3.69	78,540
24"	6.0	9.0	40	6.5	7.94	113,100

NOTES:
1. SOIL BEARING STRENGTH OF 2000 PSF IS ASSUMED IN THE CALCULATIONS ABOVE. ENGINEER SHALL VERIFY.
2. COVER GLANDS AND BOLTS WITH POLYETHYLENE BEFORE PLACING CONCRETE.
3. ALLOW CONCRETE TO SET UP A MINIMUM OF 6 HOURS BEFORE PLACING BACKFILL.
4. CONCRETE SHALL BE 3000 PSI, CLASS A.
5. ALL FITTINGS SHALL BE DUCTILE IRON AND BE BLOCKED AND SUPPORTED AS SHOWN ABOVE.

CONCRETE BLOCKING FOR TEES AND PLUGS

Etowah Water & Sewer Authority "Excellence in every drop" | ETOWAH WATER & SEWER AUTHORITY | STANDARD NO. 709 | DATE: MAY 20 | SCALE: NONE



SUPPORT/RESTRAINT FOR GATE VALVES

Etowah Water & Sewer Authority "Excellence in every drop" | ETOWAH WATER & SEWER AUTHORITY | STANDARD NO. 710 | DATE: MAY 20 | SCALE: NONE

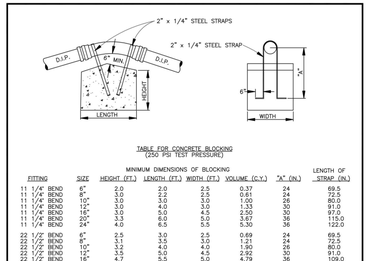


TABLE FOR CONCRETE BLOCKING
(250 PSI TEST PRESSURE)

MINIMUM DIMENSIONS OF BLOCKING

FITTING	SIZE	HEIGHT (FT.)	LENGTH (FT.)	WIDTH (FT.)	VOLUME (C.Y.)	"A" (IN.)	LENGTH OF STRAP (IN.)
11 1/4° BEND	6"	2.0	2.0	2.5	0.37	24	69.5
11 1/4° BEND	8"	3.0	2.2	2.5	0.61	24	72.5
11 1/4° BEND	10"	3.0	3.0	3.0	1.00	26	80.0
11 1/4° BEND	12"	3.0	4.0	3.0	1.33	30	91.0
11 1/4° BEND	16"	3.5	5.0	4.0	2.57	36	115.0
11 1/4° BEND	20"	4.0	6.0	5.0	3.80	36	122.0
11 1/4° BEND	24"	4.0	6.5	5.5	5.30	36	122.0
22 1/2° BEND	6"	2.5	3.0	2.5	0.69	24	69.5
22 1/2° BEND	8"	3.1	3.0	3.0	1.21	24	72.5
22 1/2° BEND	10"	3.5	4.5	3.0	1.92	30	91.0
22 1/2° BEND	12"	3.5	5.0	4.5	2.96	30	91.0
22 1/2° BEND	16"	4.7	5.5	5.0	4.79	36	109.0
22 1/2° BEND	20"	6.0	6.0	5.7	7.60	45	133.0
22 1/2° BEND	24"	8.0	5.7	6.5	10.98	60	170.0

NOTES:
1. COVER GLANDS AND BOLTS WITH POLYETHYLENE BEFORE PLACING CONCRETE.
2. ALLOW CONCRETE TO SET UP A MINIMUM OF 6 HOURS BEFORE PLACING BACKFILL.
3. CONCRETE SHALL BE 3000 PSI, CLASS A.
4. ALL FITTINGS SHALL BE DUCTILE IRON AND BE BLOCKED AND SUPPORTED AS SHOWN ABOVE.

CONCRETE BLOCKING–VERTICAL BENDS–UPWARD THRUST

Etowah Water & Sewer Authority "Excellence in every drop" | ETOWAH WATER & SEWER AUTHORITY | STANDARD NO. 711 | DATE: MAY 20 | SCALE: NONE

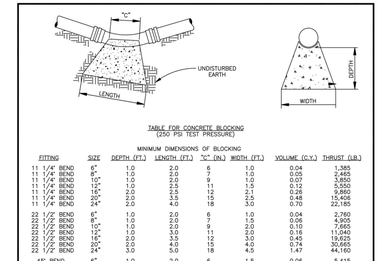


TABLE FOR CONCRETE BLOCKING
(250 PSI TEST PRESSURE)

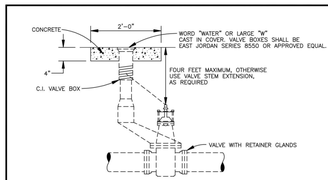
MINIMUM DIMENSIONS OF BLOCKING

FITTING	SIZE	DEPTH (FT.)	LENGTH (FT.)	"C" (IN.)	WIDTH (FT.)	VOLUME (C.Y.)	THRUST (LB.)
11 1/4° BEND	6"	1.0	2.0	6	1.0	0.04	1,385
11 1/4° BEND	8"	1.0	2.0	7	1.0	0.05	2,465
11 1/4° BEND	10"	1.0	2.0	9	1.0	0.07	3,850
11 1/4° BEND	12"	1.0	2.5	11	1.5	0.12	5,550
11 1/4° BEND	16"	2.0	3.5	12	2.1	0.28	9,860
11 1/4° BEND	18"	2.0	4.5	15	2.5	0.46	15,400
11 1/4° BEND	24"	2.0	4.0	18	3.0	0.70	22,185
22 1/2° BEND	6"	1.0	2.0	6	1.0	0.04	2,760
22 1/2° BEND	8"	1.0	2.0	7	1.5	0.06	4,905
22 1/2° BEND	10"	1.0	3.0	9	2.0	0.10	7,660
22 1/2° BEND	12"	1.0	3.0	11	2.0	0.16	11,040
22 1/2° BEND	16"	2.0	3.5	12	3.0	0.45	19,625
22 1/2° BEND	20"	2.0	4.0	15	4.0	0.74	30,665
22 1/2° BEND	24"	3.0	5.0	18	4.5	1.47	44,160
45° BEND	6"	1.0	2.0	6	1.5	0.06	5,415
45° BEND	8"	1.0	2.5	7	2.0	0.10	9,625
45° BEND	10"	2.0	3.5	9	2.5	0.31	15,040
45° BEND	12"	2.0	3.5	11	3.0	0.41	21,655
45° BEND	16"	3.0	5.0	12	4.0	1.45	38,495
45° BEND	20"	4.0	6.0	15	5.0	2.05	60,145
45° BEND	24"	4.0	7.5	18	6.5	3.35	91,610
90° BEND	6"	1.0	2.5	12	2.0	0.13	10,005
90° BEND	8"	2.0	3.0	14	3.0	0.38	17,785
90° BEND	10"	2.5	4.5	18	3.0	0.74	27,785
90° BEND	12"	3.0	5.0	20	4.0	1.24	40,000
90° BEND	16"	4.0	6.0	26	5.5	2.84	71,125
90° BEND	20"	4.0	8.0	32	7.0	4.68	111,135
90° BEND	24"	5.0	10.0	40	8.0	8.50	160,035

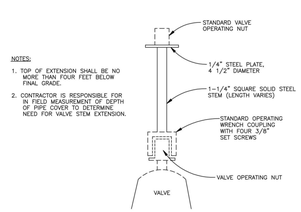
NOTES:
1. SOIL BEARING STRENGTH OF 2000 PSF IS ASSUMED IN THE CALCULATIONS ABOVE. ENGINEER SHALL VERIFY.
2. COVER GLANDS AND BOLTS WITH POLYETHYLENE BEFORE PLACING CONCRETE.
3. ALLOW CONCRETE TO SET UP A MINIMUM OF 6 HOURS BEFORE PLACING BACKFILL.
4. CONCRETE SHALL BE 3000 PSI, CLASS A.
5. ALL FITTINGS SHALL BE DUCTILE IRON AND BE BLOCKED AND SUPPORTED AS SHOWN ABOVE.

CONCRETE BLOCKING–VERTICAL BENDS–DOWNWARD THRUST

Etowah Water & Sewer Authority "Excellence in every drop" | ETOWAH WATER & SEWER AUTHORITY | STANDARD NO. 712 | DATE: MAY 20 | SCALE: NONE



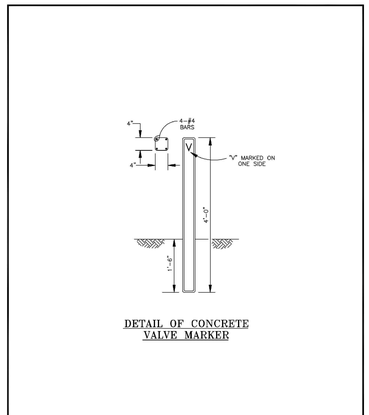
TYPICAL VALVE INSTALLATION



NOTES:
1. TOP OF EXTENSION SHALL BE NO MORE THAN FOUR FEET BELOW FINAL GRADE.
2. CONTRACTOR IS RESPONSIBLE FOR IN FIELD MEASUREMENT OF DEPTH OF PIPE COVER TO DETERMINE NEED FOR VALVE STEM EXTENSION.

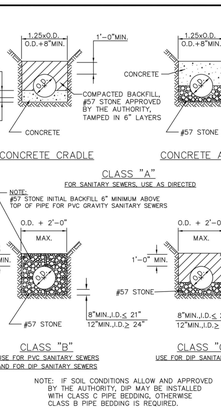
VALVE STEM EXTENSION DETAIL

Etowah Water & Sewer Authority "Excellence in every drop" | ETOWAH WATER & SEWER AUTHORITY | STANDARD NO. 714 | DATE: MAY 20 | SCALE: NONE



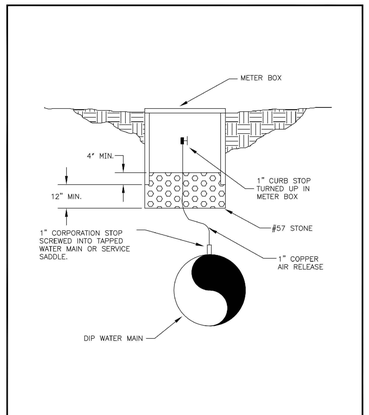
DETAIL OF CONCRETE VALVE MARKER

Etowah Water & Sewer Authority "Excellence in every drop" | ETOWAH WATER & SEWER AUTHORITY | STANDARD NO. 715 | DATE: MAY 20 | SCALE: NONE



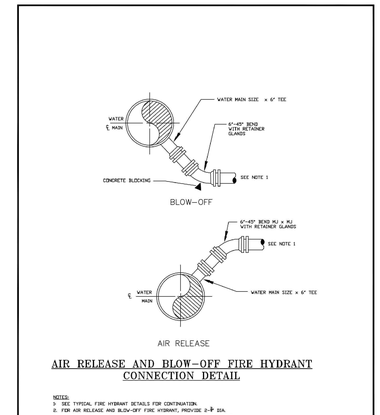
PIPE BEDDING AND HAUNCHING DETAILS

Etowah Water & Sewer Authority "Excellence in every drop" | ETOWAH WATER & SEWER AUTHORITY | STANDARD NO. 718 | DATE: MAY 20 | SCALE: NONE



MANUAL AIR RELEASE VALVE

Etowah Water & Sewer Authority "Excellence in every drop" | ETOWAH WATER & SEWER AUTHORITY | STANDARD NO. 720 | DATE: MAY 20 | SCALE: NONE



AIR RELEASE AND BLOW-OFF FIRE HYDRANT CONNECTION DETAIL

NOTES:
1. SEE TYPICAL FIRE HYDRANT DETAILS FOR CONTINUATION.
2. FOR AIR RELEASE AND BLOW-OFF FIRE HYDRANT, PROVIDE 2-# 8SA HARNESS RODS BETWEEN THE TEE AND 45 DEGREE BEND, BETWEEN THE BEND AND GATE VALVE AND FIRE HYDRANT IN ADDITION TO RESTRAINT SHOWN AND REQUIRED BLOCKING. ANCHOR COUPLINGS IN LIEU OF RETAINER GLANDS AND HARNESS RODS ARE ACCEPTABLE.

Etowah Water & Sewer Authority "Excellence in every drop" | ETOWAH WATER & SEWER AUTHORITY | STANDARD NO. 722 | DATE: MAY 20 | SCALE: NONE

PRELIMINARY DRAWING - NOT RELEASED FOR CONSTRUCTION

M:\Projects\NTR\NTR21002\04-Production\Engineering\Construction Documents\Current Drawings\NTR21002-CVR-DETAILS.dwg, 12/14/2021 2:44:23 PM, Lauren Micallef

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GEORGIA REGISTERED PROFESSIONAL ENGINEER No. 46812 RUPEN A. J. MICALLEF
NOT FOR CONSTRUCTION
12.15.21

REVISIONS

NO.	DATE	DESCRIPTION
1	-	-
2	-	-
3	-	-
4	-	-
5	-	-
6	-	-

PLAN INFORMATION

PROJECT NO.	NTR21002
FILENAME	NTR21002-CVR+DETAILS
CHECKED BY	LAM
DRAWN BY	AP
SCALE	N/A
DATE	12. 15. 2021

SHEET

CONSTRUCTION STANDARD DETAILS

C8.02