

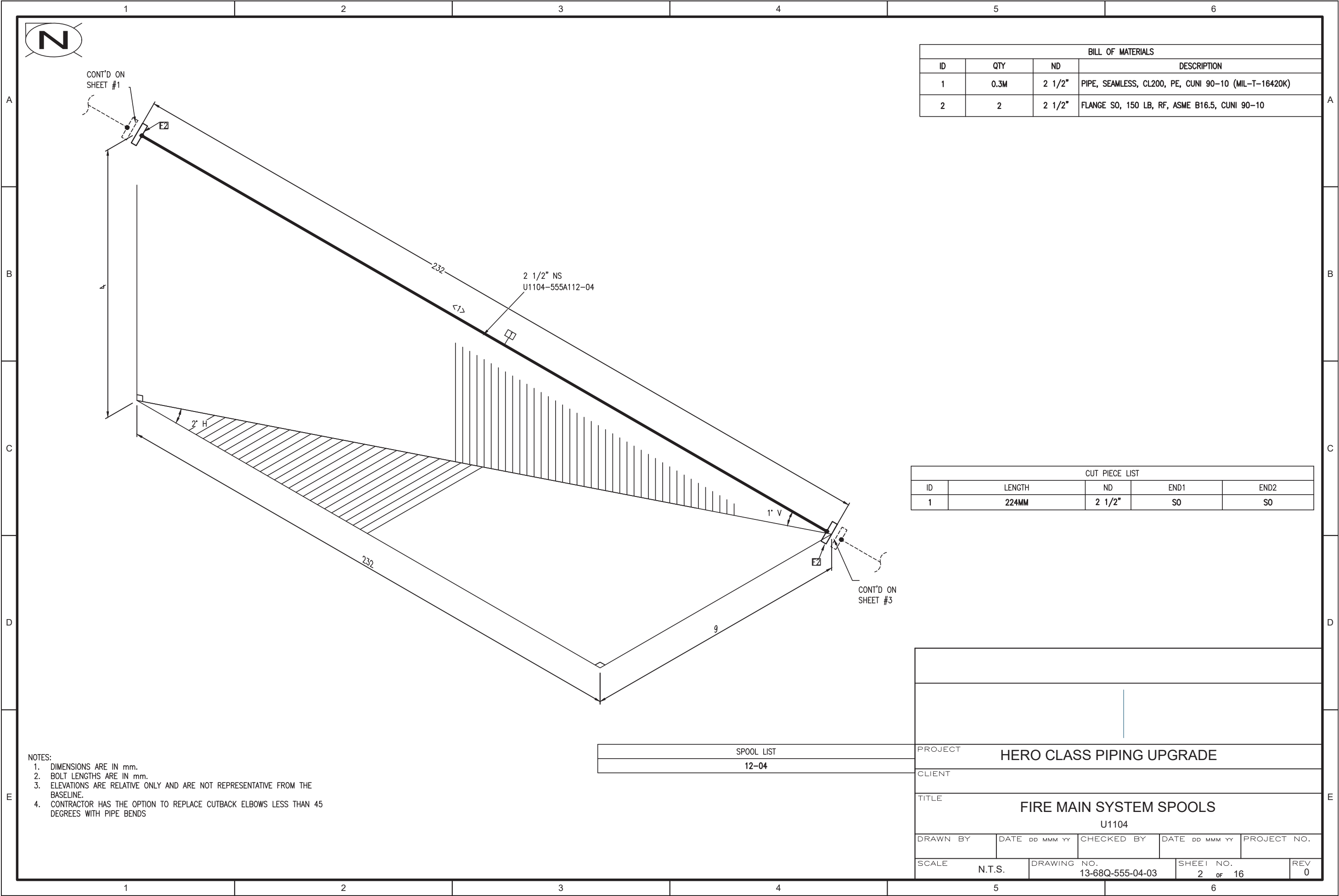
BILL OF MATERIALS			
ID	QTY	ND	DESCRIPTION
1	0.2M	2 1/2"	PIPE, SEAMLESS, CL200, PE, CUNI 90-10 (MIL-T-16420K)
2	1	2 1/2"	ELBOW 90 SR, CL200, BW, CUNI 90-10 (DWG 1385880)
3	2	2 1/2"	FLANGE SO, 150 LB, RF, ASME B16.5, CUNI 90-10
4	8	5/8"x101	BOLT SET, RF, 150 LB, STUD BOLT, SS, ASTM A193, GRADE B8M, CLASS 2A, ANSI B18.2.1
5	4	5/8"x89	BOLT SET, RF, 150 LB, STUD BOLT, SS, ASTM A193, GRADE B8M, CLASS 2A, ANSI B18.2.1
6	2	2 1/2"	GASKET, RF, 150 LB, ASME B16.21 INORGANIC FIBER WITH NITRILE BINDER, GARLOCK STYLE IFG 5500 OR EQUAL
7	1	2 1/2"	BUTTERFLY VALVE, NARROW, 150 LB, LUG, RF, ASME B16.10, BRONZE ASTM B61 OR 62

CUT PIECE LIST				
ID	LENGTH	ND	END1	END2
1	76MM	2 1/2"	SO	BEVEL
2	50MM	2 1/2"	BEVEL	SO

- NOTES:
- DIMENSIONS ARE IN mm.
 - BOLT LENGTHS ARE IN mm.
 - ELEVATIONS ARE RELATIVE ONLY AND ARE NOT REPRESENTATIVE FROM THE BASELINE.
 - CONTRACTOR HAS THE OPTION TO REPLACE CUTBACK ELBOWS LESS THAN 45 DEGREES WITH PIPE BENDS

SPPOOL LIST
12-05

PROJECT				
HERO CLASS PIPING UPGRADE				
CLIENT				
TITLE				
FIRE MAIN SYSTEM SPOOLS				
U1104				
DRAWN BY	DATE DD MMM YY	CHECKED BY	DATE DD MMM YY	PROJECT NO.
SCALE	N.T.S.	DRAWING NO.	13-68Q-555-04-03	SHEET NO.
				1 OF 16
				REV
				0



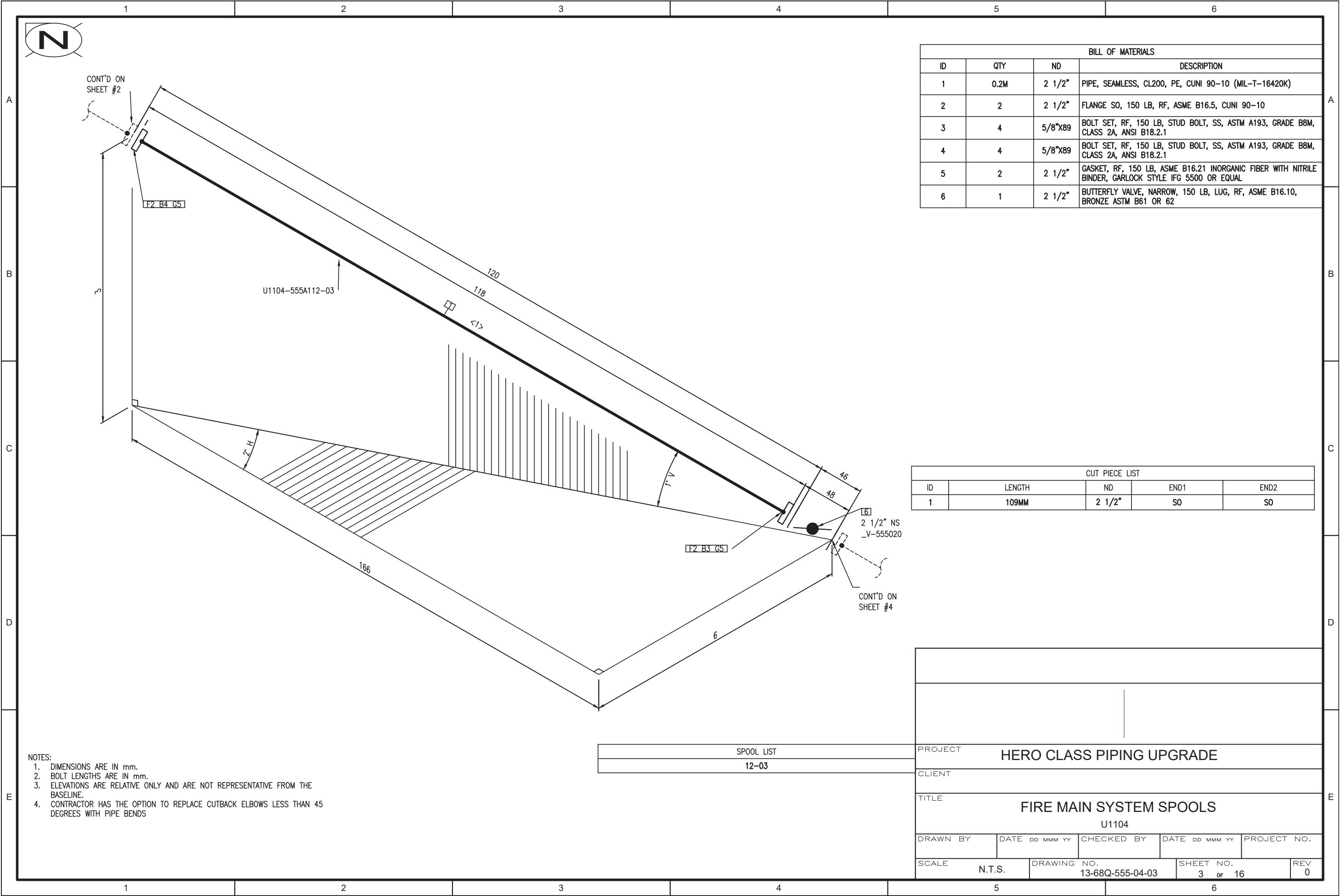
BILL OF MATERIALS			
ID	QTY	ND	DESCRIPTION
1	0.3M	2 1/2"	PIPE, SEAMLESS, CL200, PE, CUNI 90-10 (MIL-T-16420K)
2	2	2 1/2"	FLANGE S0, 150 LB, RF, ASME B16.5, CUNI 90-10

CUT PIECE LIST				
ID	LENGTH	ND	END1	END2
1	224MM	2 1/2"	S0	S0

SPOOL LIST	
12-04	

PROJECT				
HERO CLASS PIPING UPGRADE				
CLIENT				
TITLE				
FIRE MAIN SYSTEM SPOOLS				
U1104				
DRAWN BY	DATE DD MMM YY	CHECKED BY	DATE DD MMM YY	PROJECT NO.
SCALE	N.T.S.	DRAWING NO.	13-68Q-555-04-03	SHEET NO.
			2 OF 16	REV
				0

- NOTES:
- 1. DIMENSIONS ARE IN mm.
 - 2. BOLT LENGTHS ARE IN mm.
 - 3. ELEVATIONS ARE RELATIVE ONLY AND ARE NOT REPRESENTATIVE FROM THE BASELINE.
 - 4. CONTRACTOR HAS THE OPTION TO REPLACE CUTBACK ELBOWS LESS THAN 45 DEGREES WITH PIPE BENDS



BILL OF MATERIALS			
ID	QTY	ND	DESCRIPTION
1	0.2M	2 1/2"	PIPE, SEAMLESS, CL200, PE, CUNI 90-10 (MIL-T-16420K)
2	2	2 1/2"	FLANGE S0, 150 LB, RF, ASME B16.5, CUNI 90-10
3	4	5/8"x89	BOLT SET, RF, 150 LB, STUD BOLT, SS, ASTM A193, GRADE B8M, CLASS 2A, ANSI B18.2.1
4	4	5/8"x89	BOLT SET, RF, 150 LB, STUD BOLT, SS, ASTM A193, GRADE B8M, CLASS 2A, ANSI B18.2.1
5	2	2 1/2"	GASKET, RF, 150 LB, ASME B16.21 INORGANIC FIBER WITH NITRILE BINDER, GARLOCK STYLE IFG 5500 OR EQUAL
6	1	2 1/2"	BUTTERFLY VALVE, NARROW, 150 LB, LUG, RF, ASME B16.10, BRONZE ASTM B61 OR 62

CUT PIECE LIST				
ID	LENGTH	ND	END1	END2
1	109MM	2 1/2"	S0	S0

SPOOL LIST

12-03

PROJECT

HERO CLASS PIPING UPGRADE

CLIENT

TITLE

FIRE MAIN SYSTEM SPOOLS

U1104

DRAWN BY

DATE DD MMM YY

CHECKED BY

DATE DD MMM YY

PROJECT NO.

SCALE

N.T.S.

DRAWING NO.

13-68Q-555-04-03

SHEET NO.

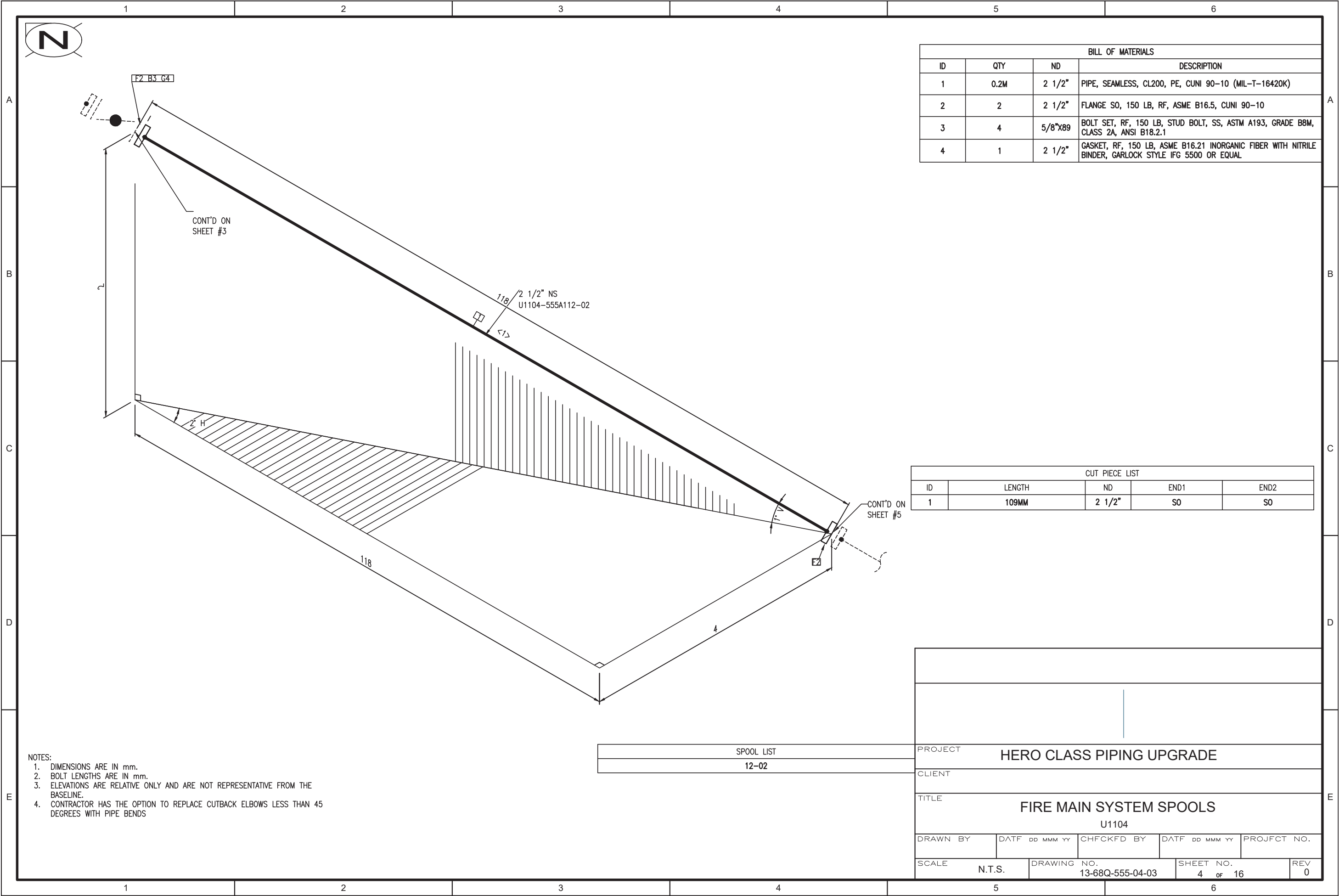
3 OF 16

REV

0

NOTES:

1. DIMENSIONS ARE IN mm.
2. BOLT LENGTHS ARE IN mm.
3. ELEVATIONS ARE RELATIVE ONLY AND ARE NOT REPRESENTATIVE FROM THE BASELINE.
4. CONTRACTOR HAS THE OPTION TO REPLACE CUTBACK ELBOWS LESS THAN 45 DEGREES WITH PIPE BENDS



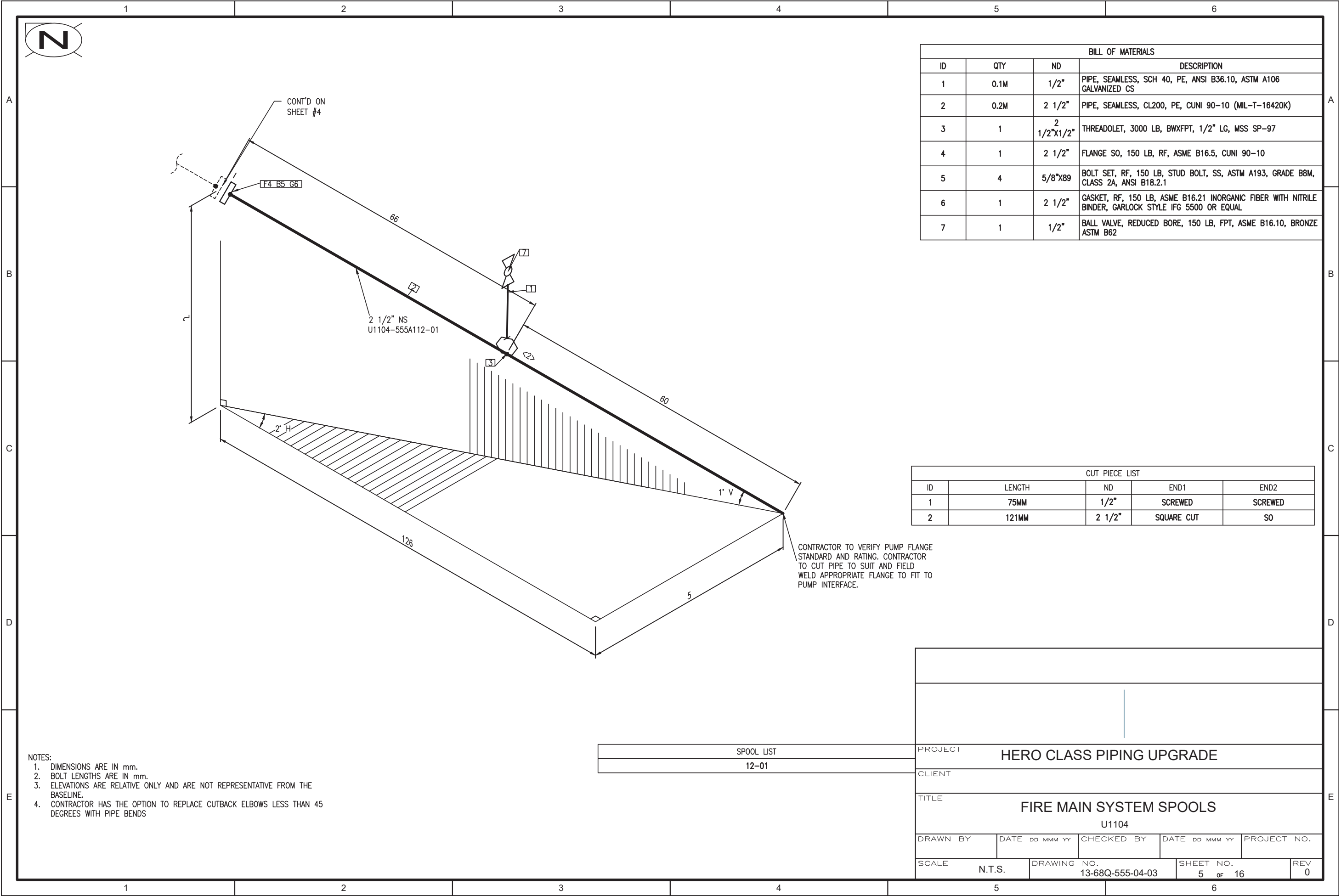
BILL OF MATERIALS			
ID	QTY	ND	DESCRIPTION
1	0.2M	2 1/2"	PIPE, SEAMLESS, CL200, PE, CUNI 90-10 (MIL-T-16420K)
2	2	2 1/2"	FLANGE S0, 150 LB, RF, ASME B16.5, CUNI 90-10
3	4	5/8"x89	BOLT SET, RF, 150 LB, STUD BOLT, SS, ASTM A193, GRADE B8M, CLASS 2A, ANSI B18.2.1
4	1	2 1/2"	GASKET, RF, 150 LB, ASME B16.21 INORGANIC FIBER WITH NITRILE BINDER, GARLOCK STYLE IFG 5500 OR EQUAL

CUT PIECE LIST				
ID	LENGTH	ND	END1	END2
1	109MM	2 1/2"	S0	S0

- NOTES:
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 - BOLT LENGTHS ARE IN mm.
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 - CONTRACTOR HAS THE OPTION TO REPLACE CUTBACK ELBOWS LESS THAN 45 DEGREES WITH PIPE BENDS

SPOOL LIST
12-02

PROJECT				
HERO CLASS PIPING UPGRADE				
CLIENT				
TITLE				
FIRE MAIN SYSTEM SPOOLS				
U1104				
DRAWN BY	DATE DD MMM YY	CHKD BY	DATE DD MMM YY	PROJECT NO.
SCALE	N.T.S.	DRAWING NO.	13-68Q-555-04-03	SHEET NO. 4 OF 16
				REV 0



BILL OF MATERIALS			
ID	QTY	ND	DESCRIPTION
1	0.1M	1/2"	PIPE, SEAMLESS, SCH 40, PE, ANSI B36.10, ASTM A106 GALVANIZED CS
2	0.2M	2 1/2"	PIPE, SEAMLESS, CL200, PE, CUNI 90-10 (MIL-T-16420K)
3	1	² 1/2"x1/2"	THREADOLET, 3000 LB, BWXFT, 1/2" LG, MSS SP-97
4	1	2 1/2"	FLANGE SO, 150 LB, RF, ASME B16.5, CUNI 90-10
5	4	5/8"x89	BOLT SET, RF, 150 LB, STUD BOLT, SS, ASTM A193, GRADE B8M, CLASS 2A, ANSI B18.2.1
6	1	2 1/2"	GASKET, RF, 150 LB, ASME B16.21 INORGANIC FIBER WITH NITRILE BINDER, GARLOCK STYLE IFG 5500 OR EQUAL
7	1	1/2"	BALL VALVE, REDUCED BORE, 150 LB, FPT, ASME B16.10, BRONZE ASTM B62

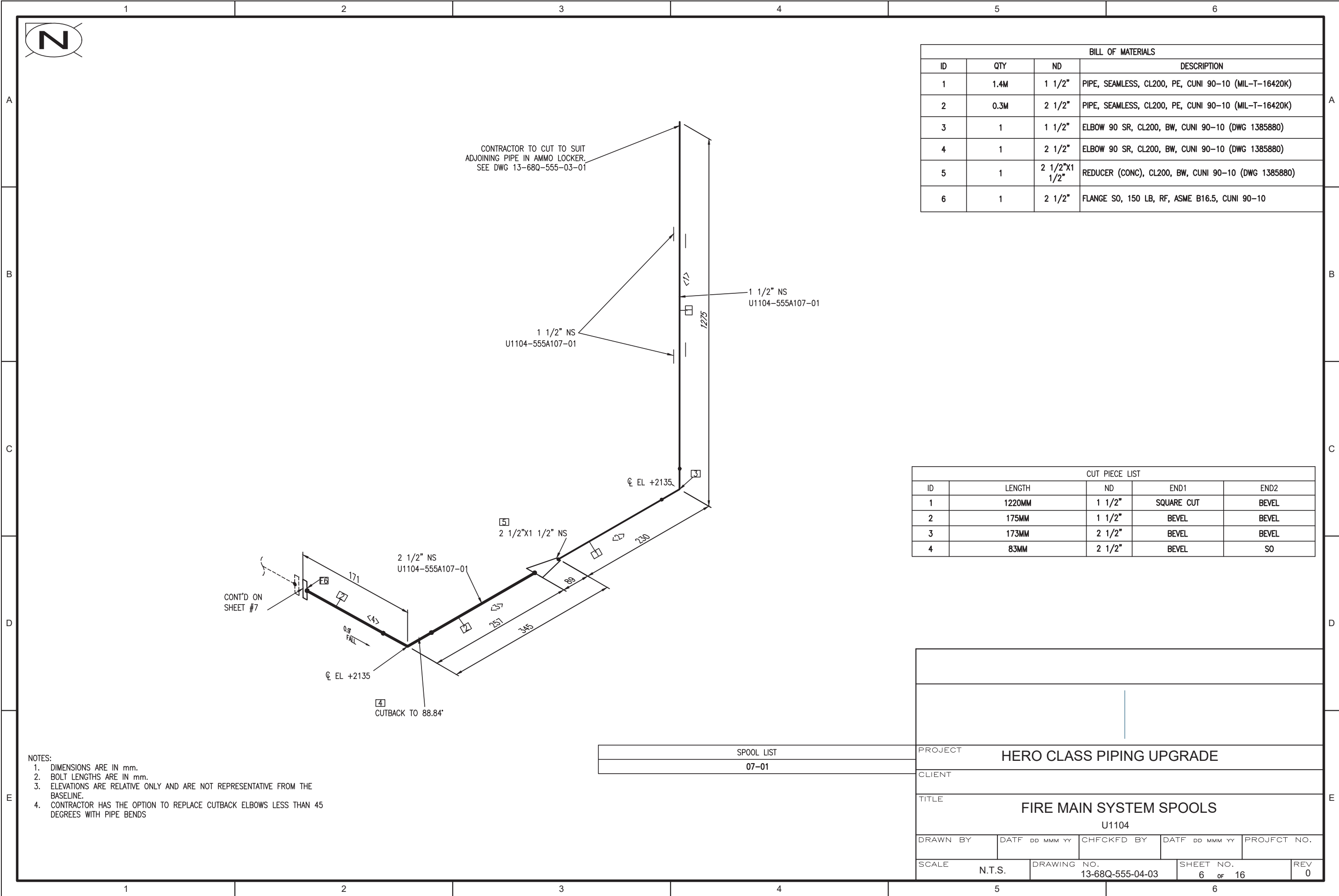
CUT PIECE LIST				
ID	LENGTH	ND	END1	END2
1	75MM	1/2"	SCREWED	SCREWED
2	121MM	2 1/2"	SQUARE CUT	SO

CONTRACTOR TO VERIFY PUMP FLANGE STANDARD AND RATING. CONTRACTOR TO CUT PIPE TO SUIT AND FIELD WELD APPROPRIATE FLANGE TO FIT TO PUMP INTERFACE.

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 - CONTRACTOR HAS THE OPTION TO REPLACE CUTBACK ELBOWS LESS THAN 45 DEGREES WITH PIPE BENDS

SPPOOL LIST
12-01

PROJECT				
HERO CLASS PIPING UPGRADE				
CLIENT				
TITLE				
FIRE MAIN SYSTEM SPOOLS				
U1104				
DRAWN BY	DATE DD MMM YY	CHECKED BY	DATE DD MMM YY	PROJECT NO.
SCALE	N.T.S.	DRAWING NO.	13-68Q-555-04-03	SHEET NO.
			5 OF 16	REV
				0



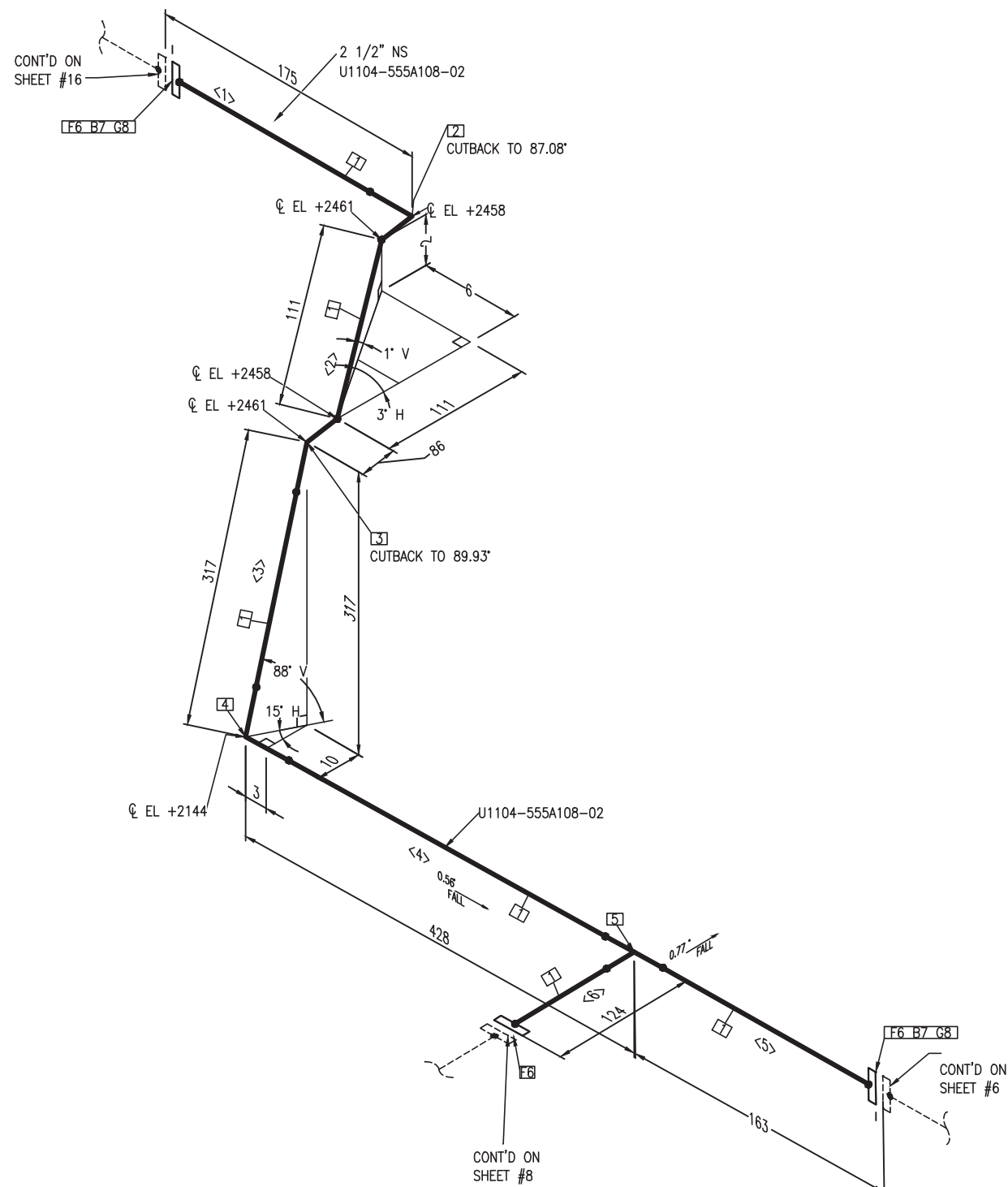
BILL OF MATERIALS			
ID	QTY	ND	DESCRIPTION
1	1.4M	1 1/2"	PIPE, SEAMLESS, CL200, PE, CUNI 90-10 (MIL-T-16420K)
2	0.3M	2 1/2"	PIPE, SEAMLESS, CL200, PE, CUNI 90-10 (MIL-T-16420K)
3	1	1 1/2"	ELBOW 90 SR, CL200, BW, CUNI 90-10 (DWG 1385880)
4	1	2 1/2"	ELBOW 90 SR, CL200, BW, CUNI 90-10 (DWG 1385880)
5	1	2 1/2"x1 1/2"	REDUCER (CONC), CL200, BW, CUNI 90-10 (DWG 1385880)
6	1	2 1/2"	FLANGE SO, 150 LB, RF, ASME B16.5, CUNI 90-10

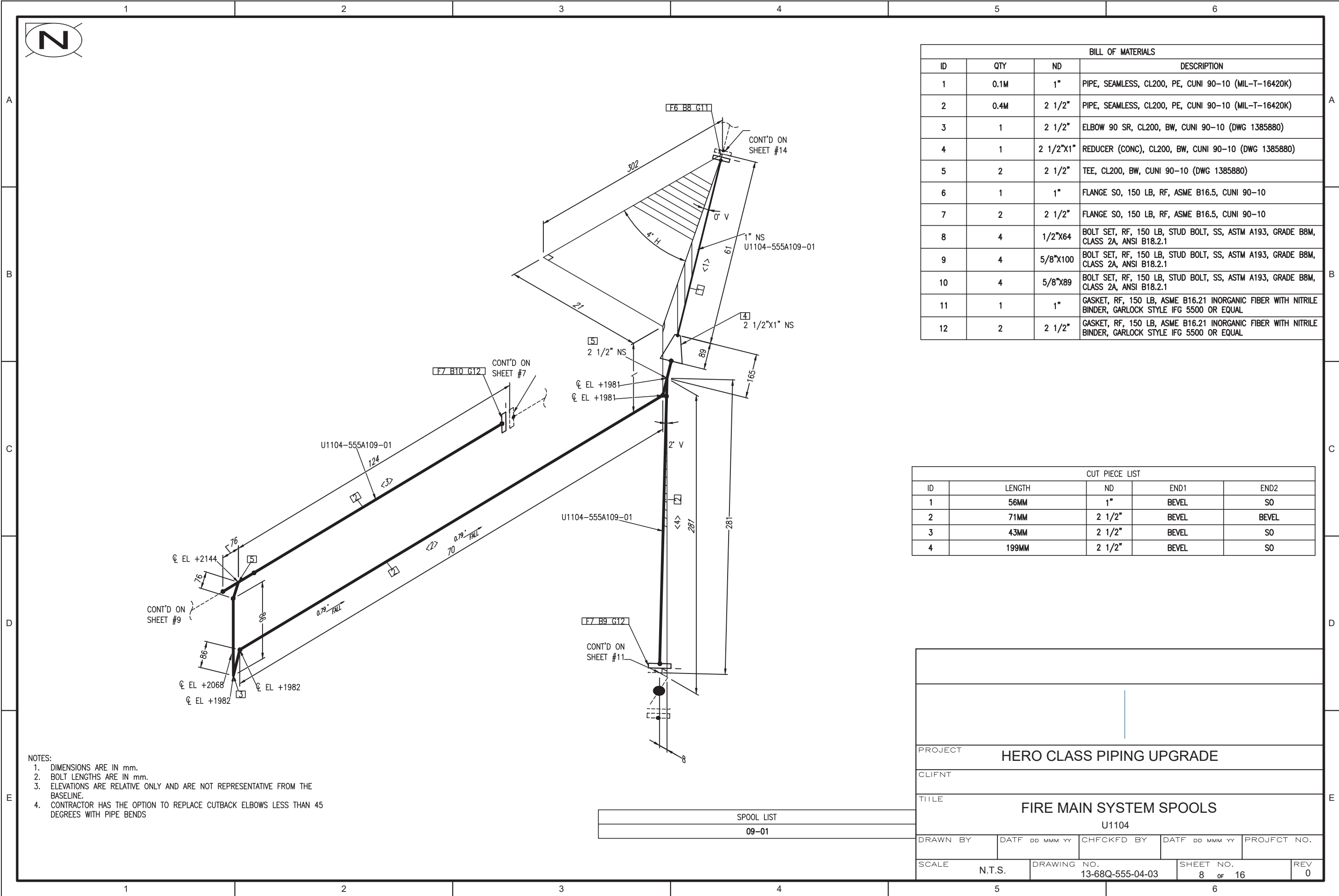
CUT PIECE LIST				
ID	LENGTH	ND	END1	END2
1	1220MM	1 1/2"	SQUARE CUT	BEVEL
2	175MM	1 1/2"	BEVEL	BEVEL
3	173MM	2 1/2"	BEVEL	BEVEL
4	83MM	2 1/2"	BEVEL	SO

SPOOL LIST
07-01

PROJECT				
HERO CLASS PIPING UPGRADE				
CLIENT				
TITLE				
FIRE MAIN SYSTEM SPOOLS				
U1104				
DRAWN BY	DATF DD MMM YY	CHKCKFD BY	DATF DD MMM YY	PROJFCT NO.
SCALE	N.T.S.	DRAWING NO.	13-68Q-555-04-03	SHEET NO. 6 of 16
				REV 0

- NOTES:
- DIMENSIONS ARE IN mm.
 - BOLT LENGTHS ARE IN mm.
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 - CONTRACTOR HAS THE OPTION TO REPLACE CUTBACK ELBOWS LESS THAN 45 DEGREES WITH PIPE BENDS





BILL OF MATERIALS			
ID	QTY	ND	DESCRIPTION
1	0.1M	1"	PIPE, SEAMLESS, CL200, PE, CUNI 90-10 (MIL-T-16420K)
2	0.4M	2 1/2"	PIPE, SEAMLESS, CL200, PE, CUNI 90-10 (MIL-T-16420K)
3	1	2 1/2"	ELBOW 90 SR, CL200, BW, CUNI 90-10 (DWG 1385880)
4	1	2 1/2"x1"	REDUCER (CONC), CL200, BW, CUNI 90-10 (DWG 1385880)
5	2	2 1/2"	TEE, CL200, BW, CUNI 90-10 (DWG 1385880)
6	1	1"	FLANGE SO, 150 LB, RF, ASME B16.5, CUNI 90-10
7	2	2 1/2"	FLANGE SO, 150 LB, RF, ASME B16.5, CUNI 90-10
8	4	1/2"x64	BOLT SET, RF, 150 LB, STUD BOLT, SS, ASTM A193, GRADE B8M, CLASS 2A, ANSI B18.2.1
9	4	5/8"x100	BOLT SET, RF, 150 LB, STUD BOLT, SS, ASTM A193, GRADE B8M, CLASS 2A, ANSI B18.2.1
10	4	5/8"x89	BOLT SET, RF, 150 LB, STUD BOLT, SS, ASTM A193, GRADE B8M, CLASS 2A, ANSI B18.2.1
11	1	1"	GASKET, RF, 150 LB, ASME B16.21 INORGANIC FIBER WITH NITRILE BINDER, GARLOCK STYLE IFG 5500 OR EQUAL
12	2	2 1/2"	GASKET, RF, 150 LB, ASME B16.21 INORGANIC FIBER WITH NITRILE BINDER, GARLOCK STYLE IFG 5500 OR EQUAL

CUT PIECE LIST				
ID	LENGTH	ND	END1	END2
1	56MM	1"	BEVEL	SO
2	71MM	2 1/2"	BEVEL	BEVEL
3	43MM	2 1/2"	BEVEL	SO
4	199MM	2 1/2"	BEVEL	SO

PROJECT

HERO CLASS PIPING UPGRADE

CLIFNT

TITLE

FIRE MAIN SYSTEM SPOOLS

U1104

DRAWN BY

DATF DD MMM YY

CHFKCKFD BY

DATF DD MMM YY

PROJFCT NO.

SCALE

N.T.S.

DRAWING NO.

13-68Q-555-04-03

SHEET NO.

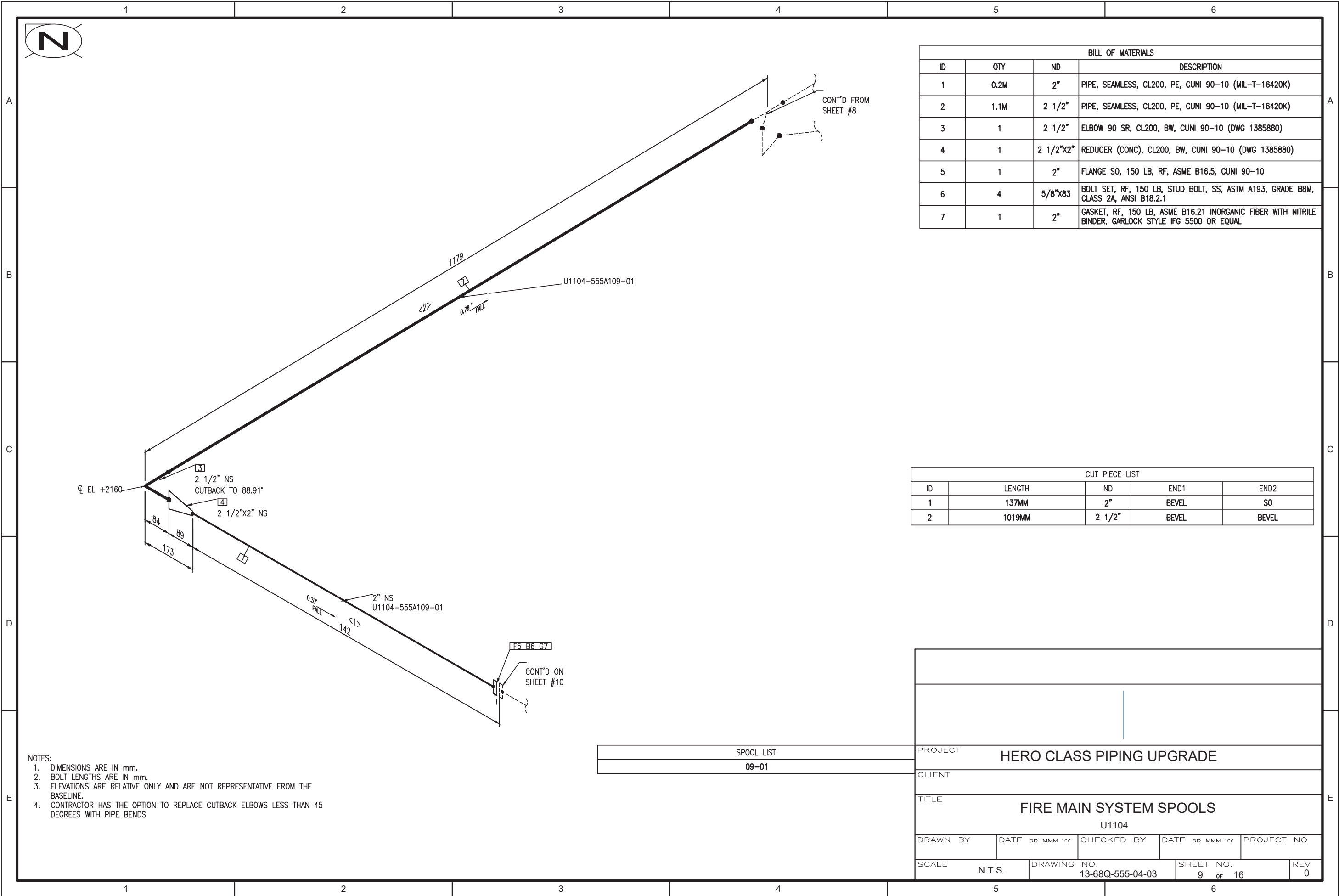
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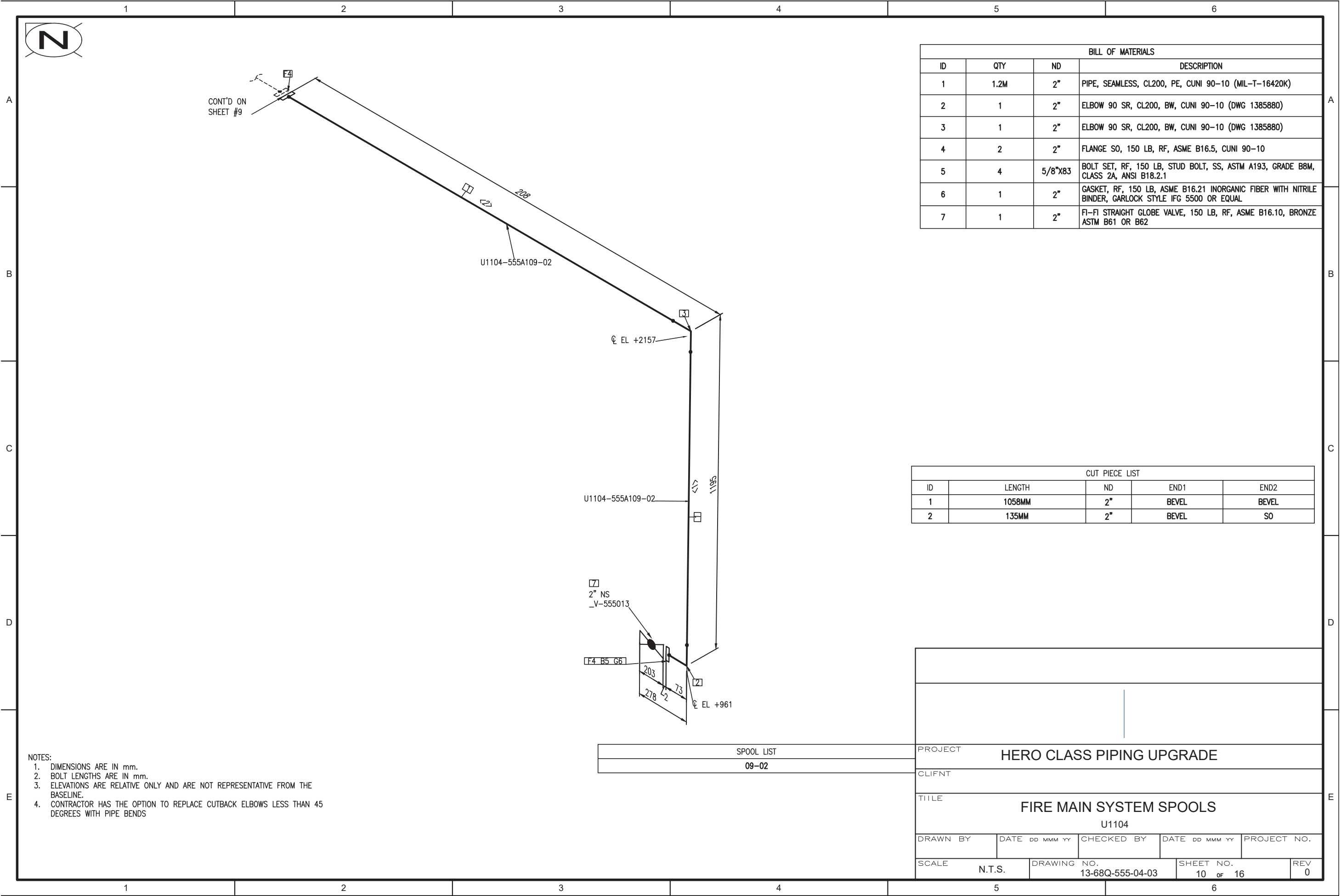
REV

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- NOTES:
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 - BOLT LENGTHS ARE IN mm.
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 - CONTRACTOR HAS THE OPTION TO REPLACE CUTBACK ELBOWS LESS THAN 45 DEGREES WITH PIPE BENDS

SPOOL LIST
09-01





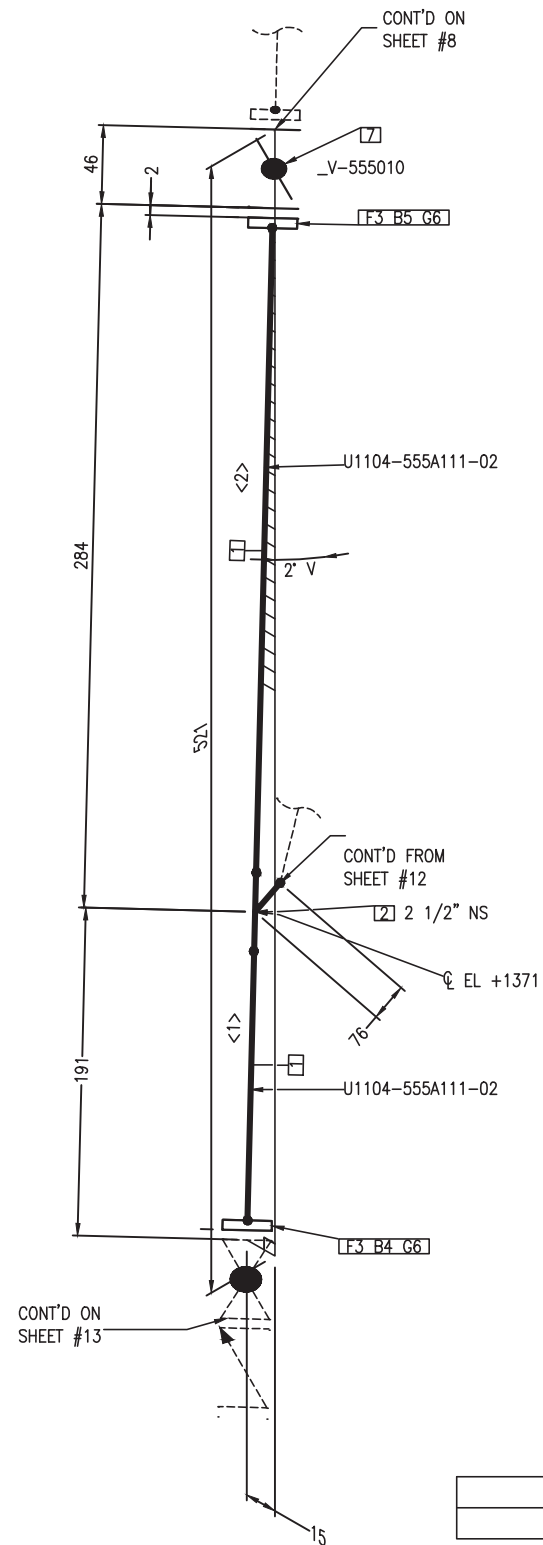
BILL OF MATERIALS			
ID	QTY	ND	DESCRIPTION
1	1.2M	2"	PIPE, SEAMLESS, CL200, PE, CUNI 90-10 (MIL-T-16420K)
2	1	2"	ELBOW 90 SR, CL200, BW, CUNI 90-10 (DWG 1385880)
3	1	2"	ELBOW 90 SR, CL200, BW, CUNI 90-10 (DWG 1385880)
4	2	2"	FLANGE SO, 150 LB, RF, ASME B16.5, CUNI 90-10
5	4	5/8"x83	BOLT SET, RF, 150 LB, STUD BOLT, SS, ASTM A193, GRADE B8M, CLASS 2A, ANSI B18.2.1
6	1	2"	GASKET, RF, 150 LB, ASME B16.21 INORGANIC FIBER WITH NITRILE BINDER, GARLOCK STYLE IFG 5500 OR EQUAL
7	1	2"	FI-FI STRAIGHT GLOBE VALVE, 150 LB, RF, ASME B16.10, BRONZE ASTM B61 OR B62

CUT PIECE LIST				
ID	LENGTH	ND	END1	END2
1	1058MM	2"	BEVEL	BEVEL
2	135MM	2"	BEVEL	SO

SPPOOL LIST
09-02

PROJECT				
HERO CLASS PIPING UPGRADE				
CLIFNT				
TITLE				
FIRE MAIN SYSTEM SPOOLS				
U1104				
DRAWN BY	DATE DD MMM YY	CHECKED BY	DATE DD MMM YY	PROJECT NO.
SCALE	N.T.S.	DRAWING NO.	13-68Q-555-04-03	SHEET NO.
		10 OF 16		REV
				0

- NOTES:
- DIMENSIONS ARE IN mm.
 - BOLT LENGTHS ARE IN mm.
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 - CONTRACTOR HAS THE OPTION TO REPLACE CUTBACK ELBOWS LESS THAN 45 DEGREES WITH PIPE BENDS



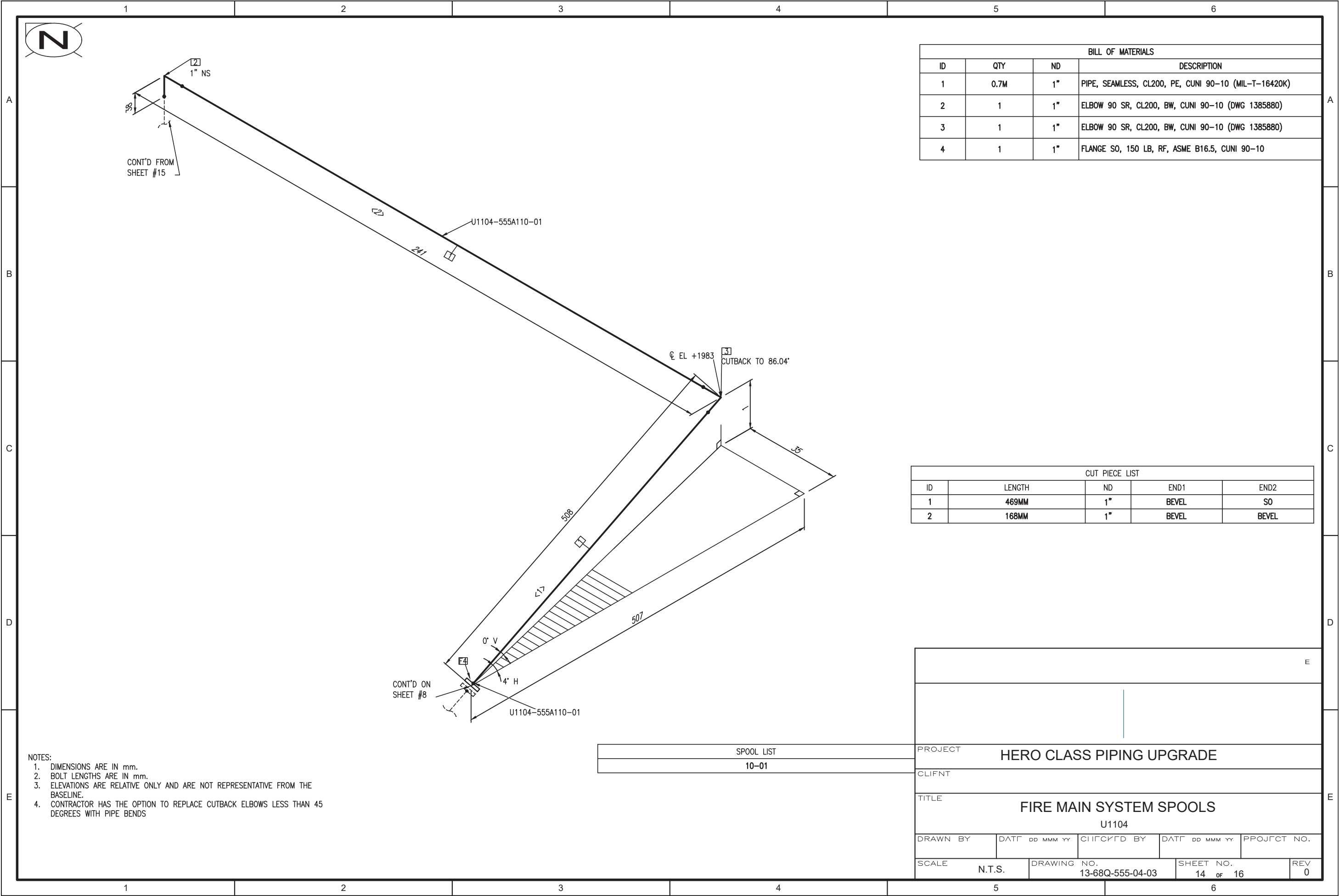
- NOTES:
1. DIMENSIONS ARE IN mm.
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 4. CONTRACTOR HAS THE OPTION TO REPLACE CUTBACK ELBOWS LESS THAN 45 DEGREES WITH PIPE BENDS

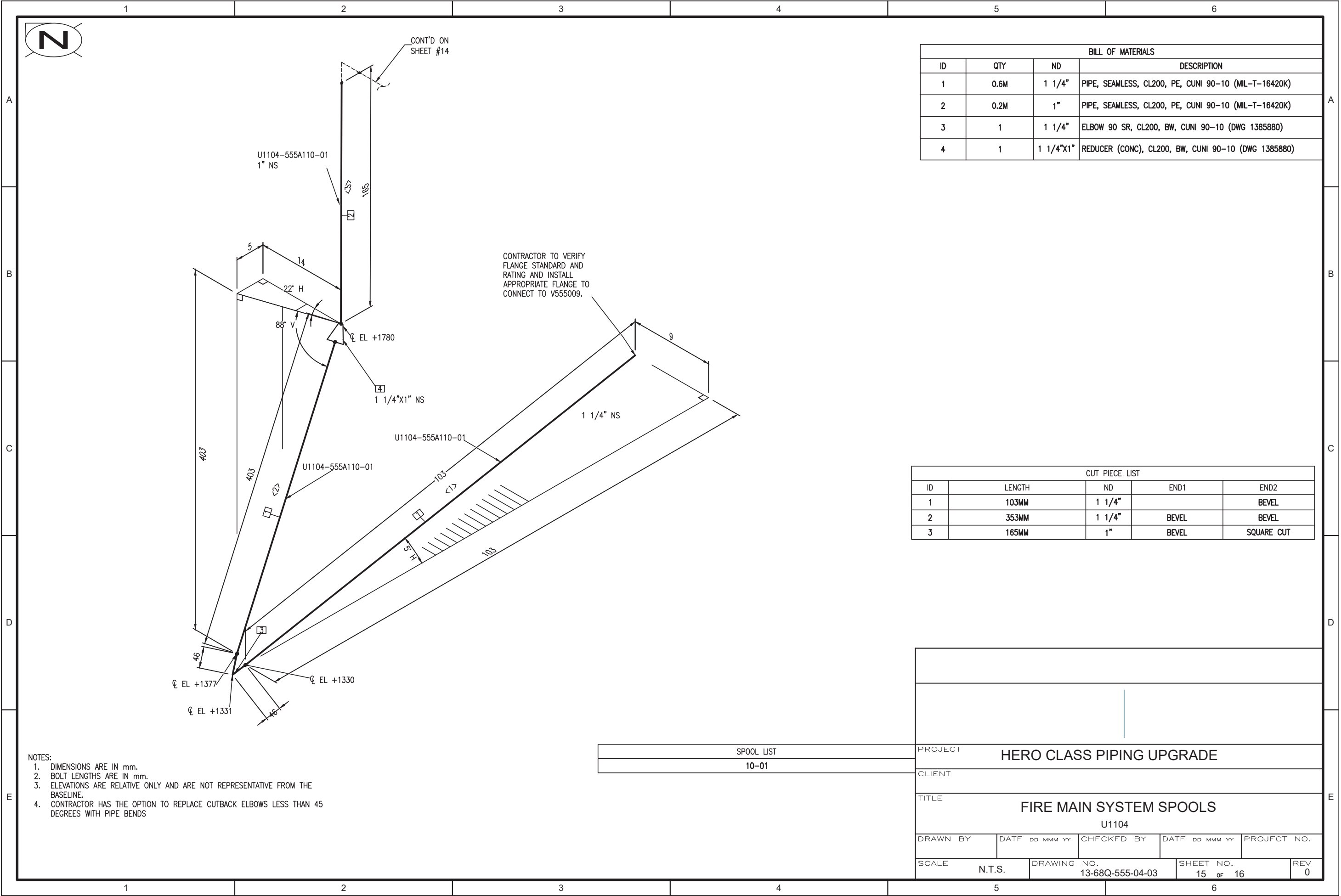
SPOOL LIST	
11-02	

BILL OF MATERIALS			
ID	QTY	ND	DESCRIPTION
1	0.4M	2 1/2"	PIPE, SEAMLESS, CL200, PE, CUNI 90-10 (MIL-T-16420K)
2	1	2 1/2"	TEE, CL200, BW, CUNI 90-10 (DWG 1385880)
3	2	2 1/2"	FLANGE SO, 150 LB, RF, ASME B16.5, CUNI 90-10
4	4	5/8"x89	BOLT SET, RF, 150 LB, STUD BOLT, SS, ASTM A193, GRADE B8M, CLASS 2A, ANSI B18.2.1
5	4	5/8"x90	BOLT SET, RF, 150 LB, STUD BOLT, SS, ASTM A193, GRADE B8M, CLASS 2A, ANSI B18.2.1
6	2	2 1/2"	GASKET, RF, 150 LB, ASME B16.21 INORGANIC FIBER WITH NITRILE BINDER, GARLOCK STYLE IFG 5500 OR EQUAL
7	1	2 1/2"	BUTTERFLY VALVE, NARROW, 150 LB, LUG, RF, ASME B16.10, BRONZE ASTM B61 OR 62

CUT PIECE LIST				
ID	LENGTH	ND	END1	END2
1	110MM	2 1/2"	BEVEL	SO
2	202MM	2 1/2"	SO	BEVEL

PROJECT				
HERO CLASS PIPING UPGRADE				
CLIFNT				
TITLE				
FIRE MAIN SYSTEM SPOOLS				
U1104				
DRAWN BY	DATE DD MMM YY	CHECKED BY	DATE DD MMM YY	PROJECT NO.
SCALE	N.T.S.	DRAWING NO.	13-68Q-555-04-03	SHEET NO. 11 OF 16
				REV 0





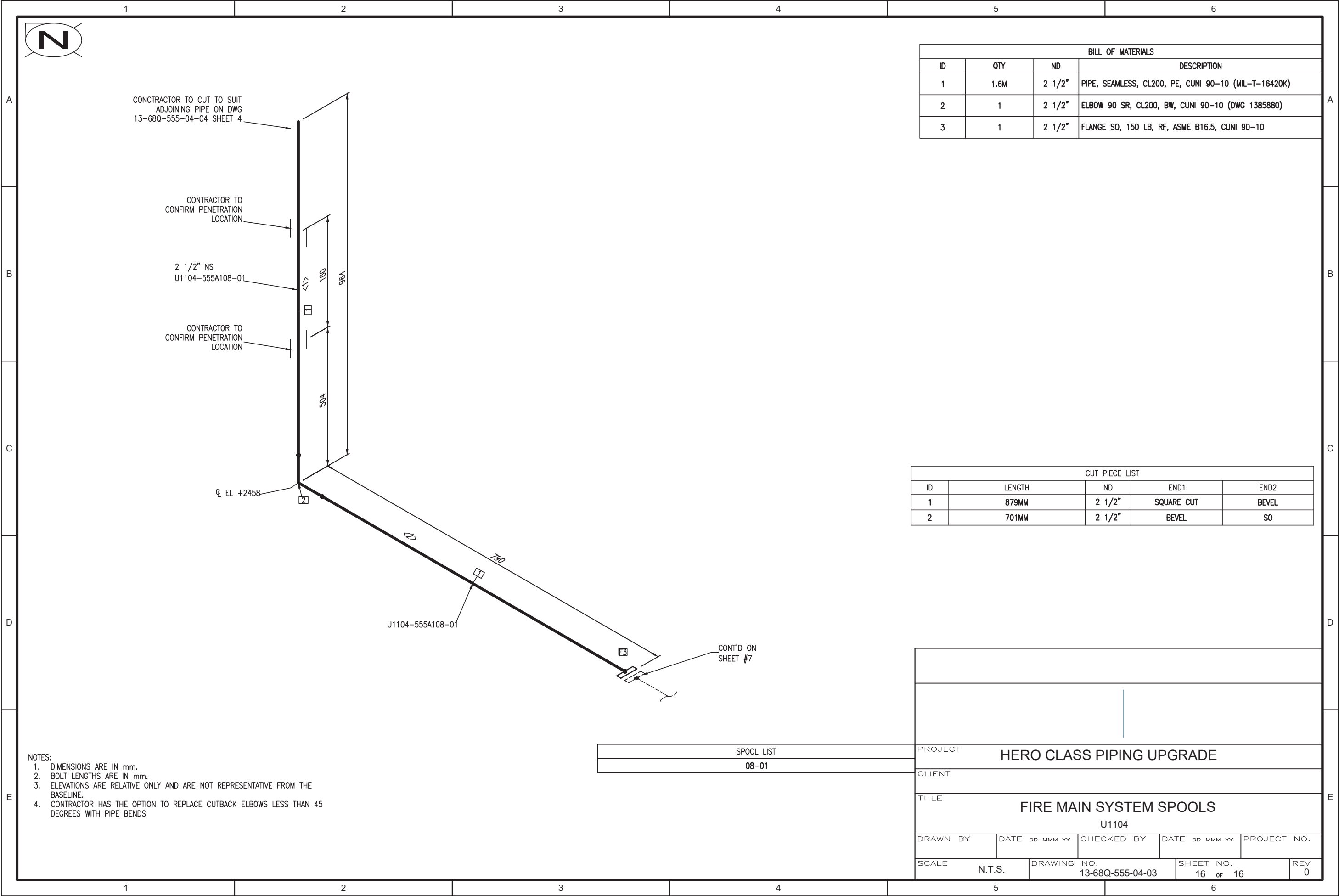
BILL OF MATERIALS			
ID	QTY	ND	DESCRIPTION
1	0.6M	1 1/4"	PIPE, SEAMLESS, CL200, PE, CUNI 90-10 (MIL-T-16420K)
2	0.2M	1"	PIPE, SEAMLESS, CL200, PE, CUNI 90-10 (MIL-T-16420K)
3	1	1 1/4"	ELBOW 90 SR, CL200, BW, CUNI 90-10 (DWG 1385880)
4	1	1 1/4"x1"	REDUCER (CONC), CL200, BW, CUNI 90-10 (DWG 1385880)

CUT PIECE LIST				
ID	LENGTH	ND	END1	END2
1	103MM	1 1/4"		BEVEL
2	353MM	1 1/4"	BEVEL	BEVEL
3	165MM	1"	BEVEL	SQUARE CUT

- NOTES:
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 - CONTRACTOR HAS THE OPTION TO REPLACE CUTBACK ELBOWS LESS THAN 45 DEGREES WITH PIPE BENDS

SPOOL LIST
10-01

PROJECT				
HERO CLASS PIPING UPGRADE				
CLIENT				
TITLE				
FIRE MAIN SYSTEM SPOOLS				
U1104				
DRAWN BY	DATF DD MMM YY	CHFKCKFD BY	DATF DD MMM YY	PROJFCT NO.
SCALE	N.T.S.	DRAWING NO.	13-68Q-555-04-03	SHEET NO.
		15 OF 16		REV
				0



BILL OF MATERIALS			
ID	QTY	ND	DESCRIPTION
1	1.6M	2 1/2"	PIPE, SEAMLESS, CL200, PE, CUNI 90-10 (MIL-T-16420K)
2	1	2 1/2"	ELBOW 90 SR, CL200, BW, CUNI 90-10 (DWG 1385880)
3	1	2 1/2"	FLANGE SO, 150 LB, RF, ASME B16.5, CUNI 90-10

CUT PIECE LIST				
ID	LENGTH	ND	END1	END2
1	879MM	2 1/2"	SQUARE CUT	BEVEL
2	701MM	2 1/2"	BEVEL	SO

SPPOOL LIST
08-01

PROJECT				
HERO CLASS PIPING UPGRADE				
CLIFNT				
TITLE				
FIRE MAIN SYSTEM SPOOLS				
U1104				
DRAWN BY	DATE DD MMM YY	CHECKED BY	DATE DD MMM YY	PROJECT NO.
SCALE	N.T.S.	DRAWING NO.	13-68Q-555-04-03	SHEET NO.
		16 OF 16		REV
				0