GENERAL UTILITY SPECIFICATIONS

ALL WORK WITHIN THE RIGHT OF WAY OF NC 12 SHALL CONFORM WITH NCDOT SPECIFICATIONS PORTIONS OF WHICH ARE NOTED ON SHEETS WW-2 WW-3 AND WW-4. FULL SPECIFICATIONS ARE AVAILABLE BY REQUEST EITHER PRINTED OR ON CD FROM THE ENGINEER.

1500–1 DESCRIPTION.

Construct various utilities as required by the plans and special provisions or as directed. Furnish all materials, labor, equipment, and incidentals necessary to complete the proposed utility work unless indicated otherwise in the proposal.

Apply the applicable provisions of the Rules and Regulations of the North Carolina Department of Environment and Natural Resources, Division of Environmental Health to the construction of water lines. Apply the Rules and Regulations of the North Carolina Department of Environment and Natural Resources, Division of Environmental Management to the construction of sanitary sewer lines except as otherwise provided.

1500–2 COOPERATION WITH THE UTILITY OWNER.

Provide access for Department Personnel and the owner's representatives to all phases of construction. Notify Department Personnel and the owners two weeks prior to commencement of any work and one week prior to service interruption.

Except in an emergency, do not operate any of the controls on the existing systems without prior approval of the owner.

1500–3 UTILITY LOCATIONS AND CONTRACTORS RESPONSIBILITY.

The plans depict the best available information for the location, size, and type of material for all existing utilities. Make investigations for determining the exact location, size, and type material of the existing facilities as necessary for the construction of the proposed utilities and for avoiding damage to existing facilities. Repair any damage incurred to existing facilities to the original or better condition at no additional cost to the Department.

1500–4 WEEKEND, NIGHT AND HOLIDAY WORK.

Make connections between existing and proposed utilities at times most convenient to the public, without endangering the utility service, and in accordance with the owner's requirements. Make connections on weekends, at night, and on holidays if necessary.

Should the position of any pole, pipe, conduit, or other structure require removal or adjustment, the Engineer will coordinate the change with the owner of the obstructions or a representative of the owner.

1500–5 RELATION OF WATER MAINS TO SANITARY SEWERS.

Lay water mains at least 10 feet (3.0 m) laterally from existing or proposed sanitary sewers. If local conditions or barriers prevent a 10 foot (3.0 m) separation, lay the water main with at least 18 inches (457.2 mm) vertical separation above the top of the sanitary sewer pipe either in a separate trench or in the same trench on a bench of undisturbed earth.

When a proposed water main crosses over a proposed or existing sanitary sewer, lay the water main with at least 18 inches (457.2 mm) vertical separation above the top of the sanitary sewer. If local conditions or barriers prevent an 18 inch (457.2 mm) vertical separation, construct both the water main and the sanitary sewer for a distance of 10 feet (3.0 m) on each side of the point crossing with ferrous pipe having water main quality joints.

When a proposed water main crosses under a proposed or existing sanitary sewer, construct both the water main and the sanitary sewer of ferrous materials with joints that are equivalent to water main standards for a distance of 10 feet (3.0 m) on each side of the point of crossing. Center the section of water pipe at the point of crossing.

1500–6 PROTECTION OF PEDESTRIAN AND VEHICULAR TRAFFIC.

During the progress of the work, keep sidewalks and crossings open for the passage of pedestrians. Unless otherwise authorized, do not obstruct streets; and unless the complete closing of a street is authorized, take such measures as may be necessary to keep the street open for traffic.

Construct and maintain adequate and approved bridges over excavations as may be necessary for the purpose of accommodating pedestrians or vehicles.

When open cut installation is allowed across a roadway and traffic is to be maintained, construct the installation in sections so that half the width of the roadway will be available to traffic. Provide all traffic control measures necessary to provide for safe traffic passage.

REFER TO NCDOT DIVISION 11, WORK ZONE TRAFFIC CONTROL FOR ADDITIONAL PEDESTRIAN AND VEHICULAR SAFETY REQUIREMENTS

SECTION 1505
EXCAVATION, TRENCHING & BACKFILLING

1505–1 DESCRIPTION.

Perform all pipe undercut excavation, furnish, place and compact foundation conditioning material, shape the pipe foundation, haul and dispose of undercut materials, and perform pavement, sidewalk and driveway repair necessary for installation of water and sanitary sewer mains and services as shown in the plans and special provisions.

1505–2 MATERIALS. SEE ADDITIONAL SPECIFICATION SHEET D3

Meet the requirements of Article 1016–3 for the classification of select material. Use the location and class of select material for foundation conditioning, bedding and backfill as shown on the plans or as directed.

1505–3 CONSTRUCTION REQUIREMENTS.

Apply the applicable requirements of Section 107, Articles 300–1, 300–4, 300–6 and Section 654 of the Standard Specifications and the following specifications:

In general, construct all portions of the excavations so that the safe slope of the earth is not exceeded. Comply with all OSHA requirements and provide a competent person on site to supervise the excavation at all times. Properly and adequately protect any part of the excavation from caving or slipping by the use of sheeting, bracing, or shoring as required.

Install all shoring in trench excavations so that it may be withdrawn in stages on both sides of the trenches to prevent lateral movement of the pipe as the backfilling progresses, except where the Engineer permits the shoring to be left in place at the Contractor's request. Cut off any sheeting left in place at least twenty–four inches (609.6 mm) below finished grade wherever directed. Remove and properly dispose of the cut off material.

Wherever necessary, in quicksand, soft or wet ground, or for the protection of surrounding structures and property, drive sheeting to such depth below the bottom of the excavation as may be necessary. The Contractor may use well points or other methods in lieu of sheeting to stabilize the banks or for protection at the discretion of the Contractor.

Take all measures necessary to keep surface water out of the foundations and trenches by diking, ditching, or otherwise avoiding it. Use approved methods for surface drainage.

Keep all excavations free of water while the work is in progress. Water may be removed by pumps or the use of underdrains, whichever will produce the above results.

Deposit all excavated material in a manner that will not endanger the work and that will avoid obstructing sidewalks and driveways. Leave hydrants under pressure, valve pit covers, valve boxes, curb stop boxes, fire and police call boxes, or other utility controls unobstructed and accessible at all times. Keep gutters clear or use other satisfactory provisions for street drainage. Do not obstruct natural watercourses.

Take whatever measures necessary to control erosion and keep silt runoff from contaminating adjoining property.

Do not lay pipe upon a foundation into which frost has penetrated, or at any time, that in the opinion of the Engineer, there is danger of the formation of ice or frost at the bottom of the excavation. The Engineer may at his discretion allow construction of the pipeline to continue under freezing conditions provided the Contractor promptly backfills the trench as directed.

Carefully lower pipe and accessories into the trench with suitable equipment. Do not drop or dump any of the materials into the trench under any circumstances.

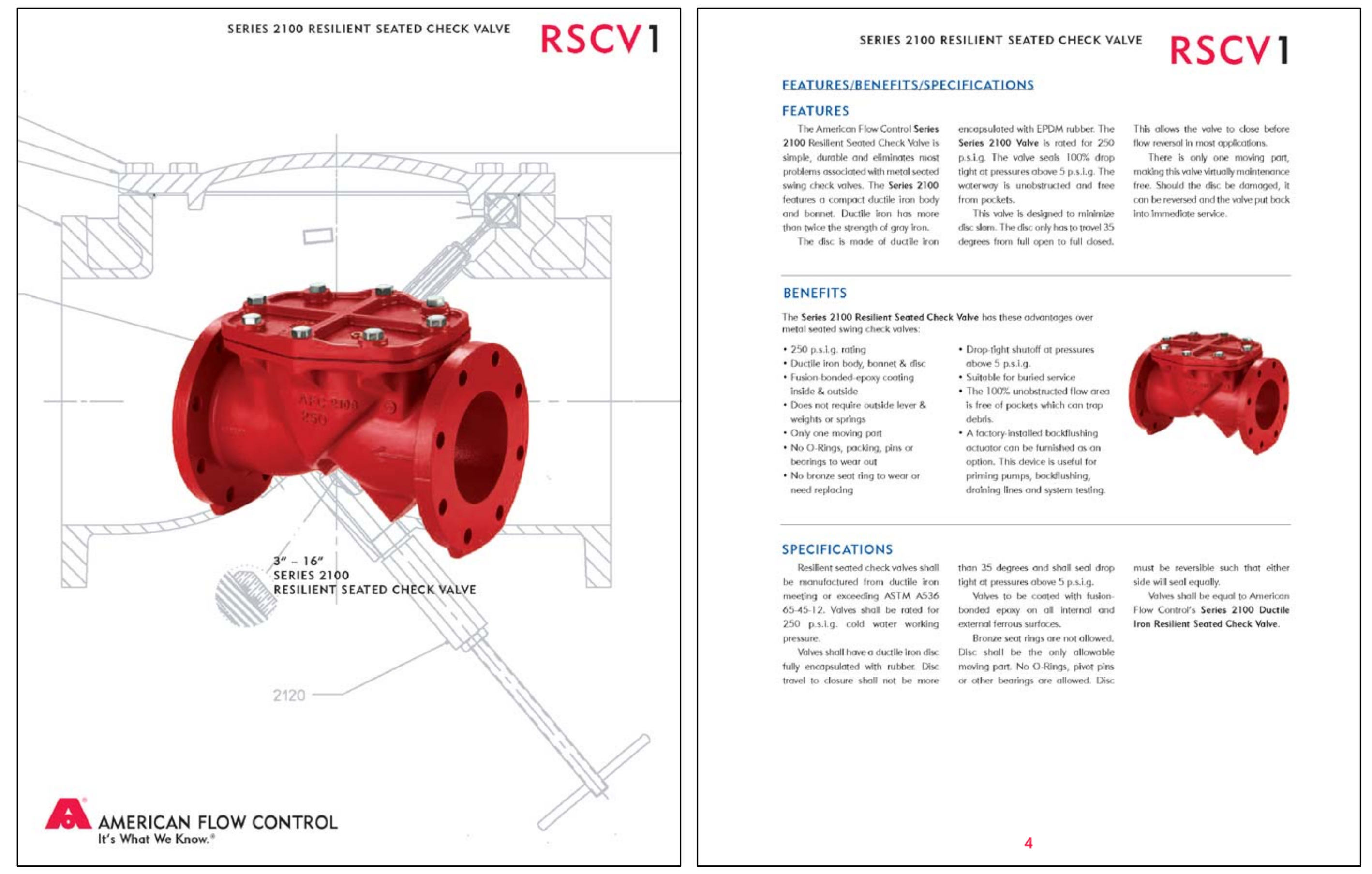
Take care to avoid abrasion of the pipe coating. Use wooden poles as levers for removing skids across trenches which have broad flat faces to prevent damage to the pipe or pipe coating.

Perform backfilling in accordance with Article 300–6 and compact to the density required by Subarticle 235–4(C).

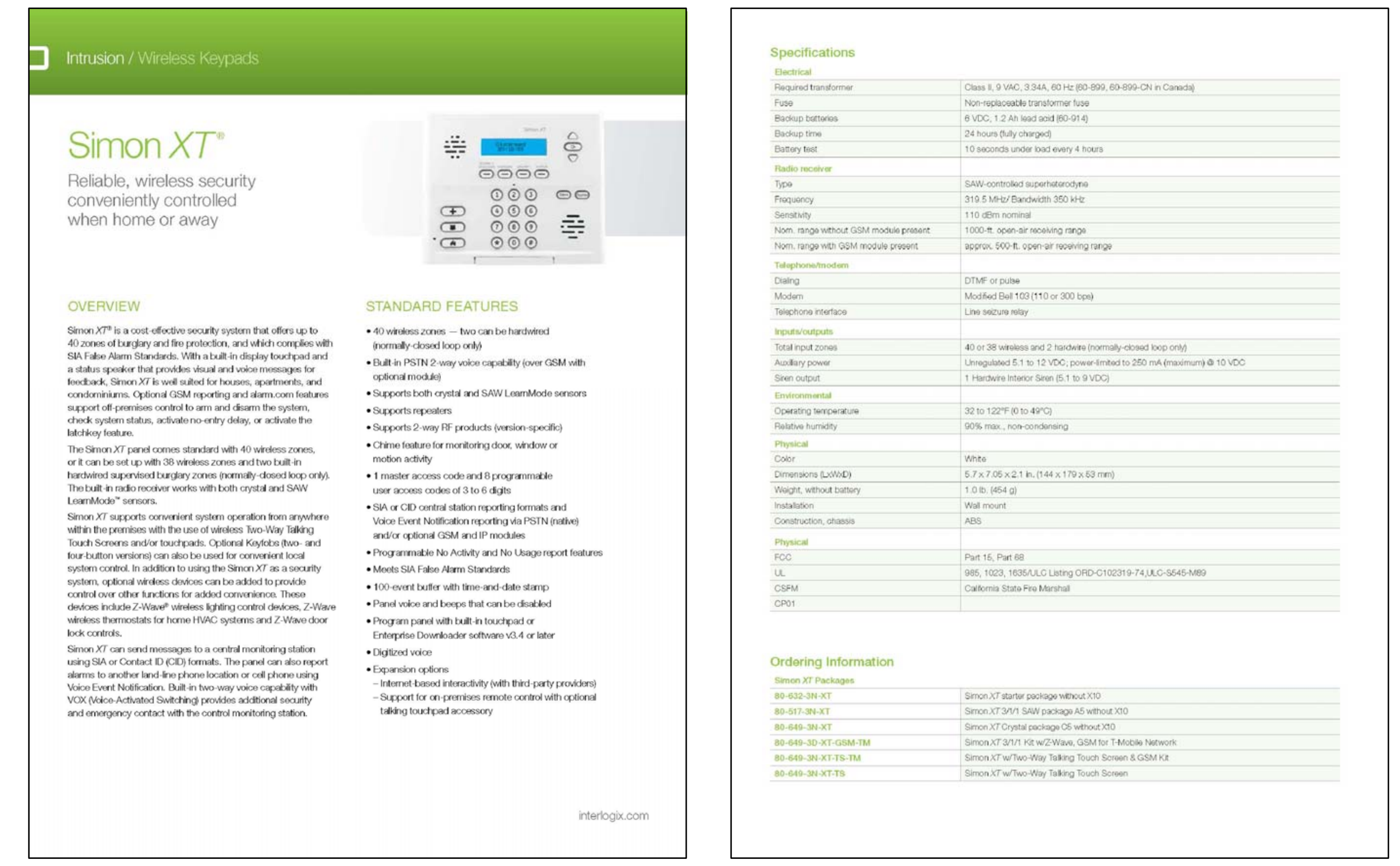
1505–4 REPAIR OF PAVEMENTS, SIDEWALKS AND DRIVEWAYS.

Repair sidewalks and driveways that are disturbed by the excavation and trenching operation to an original or better condition using Class B Concrete.

Use asphalt plant mix for pavement repair to replace pavement which was removed in order to remove or place utility pipe lines. Perform all work in accordance with Section 654. Immediately upon completion of the pipe line removal or installation, make repairs within the pavement area.

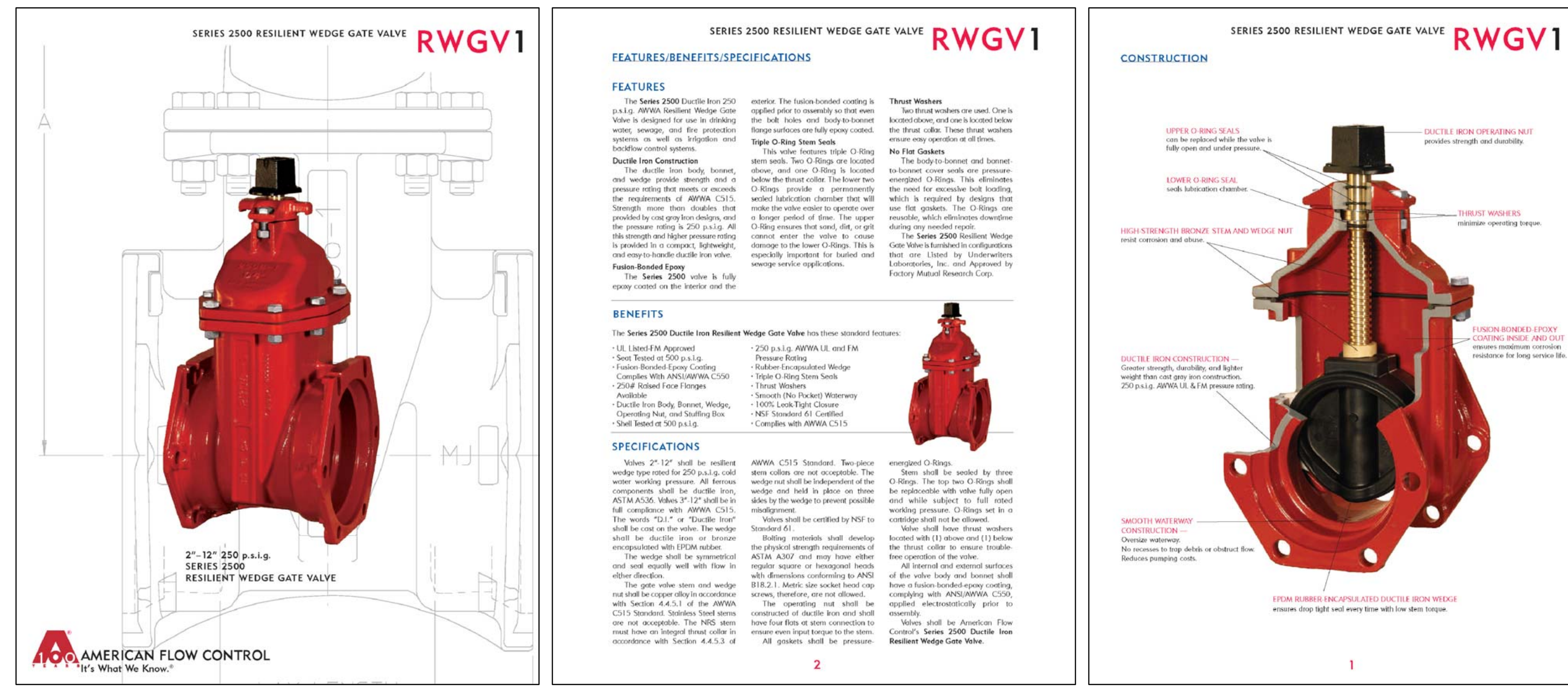


AMERICAN FLOW CONTROL SERIES 2100 RESILIENT SEATED CHECK VALVE



Simon XT Wireless AutoDialer by Interlogix - United Technologies

KDH COMMISSIONERS REVIEW PLAN
NOT RELEASED FOR CONSTRUCTION



AMERICAN FLOW CONTROL SERIES 2500 RESILIENT SEATED GATE VALVE

BUOYANCY CALCULATIONS

DENSITY ASSUMPTIONS:

CONCRETE – 150 LBS/ CU. FT.
WATER – 62.4 LBS/ CU. FT.
SOIL – 100 LBS/CU. FT.

BUOYANT FORCE CALCULATIONS:

TOP OF TANK ELEVATION = 8.50'
BOTTOM OF TANK ELEVATION = –3.00'
TANK DIAMETER – OUTSIDE = 9.34'
TANK HEIGHT = 11.50'

VOLUME DISPLACED:

$$\left[\left(\frac{3.14 \times 9.34^2}{4}\right) \times 11.50'\right] = 788 \text{ CU. FT.}$$

BUOYANT FORCE = 788 CU. FT. X 62.4 LBS/CU.FT. = 49,141 LBS

TANK WEIGHT CALCULATIONS:

TANK DIAMETER – OUTSIDE = 9.34'
TANK DIAMETER – INSIDE = 8.00'
WALL THICKNESS = 0.67'
TOP DIAMETER = 9.34'
TOP THICKNESS = 0.67'
BOTTOM DIAMETER = 10.34'
BOTTOM THICKNESS = 0.67'

TANK WALL VOLUME:

$$\left[\left(\frac{3.14 \times 9.34^2}{4}\right) \times 9.83'\right] - \left[\left(\frac{3.14 \times 8.00^2}{4}\right) \times 9.83'\right] = 179 \text{ CU. FT.}$$

TANK WALL WEIGHT = 179 CU. FT. x 150 LBS/CU.FT. = 26,850 LBS

$$\text{TANK TOP VOLUME} = \left(\frac{3.14 \times 9.34^2}{4}\right) \times 0.67' = 45.9 \text{ CU. FT.}$$

TANK TOP WEIGHT = 45.9 CU. FT. x 150 LBS/CU.FT. = 6,885 LBS

$$\text{TANK BOTTOM VOLUME} = \left(\frac{3.14 \times 10.34^2}{4}\right) \times 0.67' = 56.3 \text{ CU. FT.}$$

TANK BOTTOM WEIGHT = 56.3 CU. FT. x 150 LBS/CU.FT. = 8,445 LBS

TOTAL TANK WEIGHT = 42,180 LBS.

SOIL WEIGHT CALCULATIONS:

EXTENDED BASE AREA:

$$\left(\frac{3.14 \times 10.34^2}{4}\right) - \left(\frac{3.14 \times 9.34^2}{4}\right) = 15.45 \text{ SQ. FT.}$$

SOIL WEIGHT ABOVE EXTENDED BASE:
15.45 SQ. FT. x 10.0 FT DEPTH X 110 LBS/CU.FT. = 16,995 LBS

TOTAL BUOYANT FORCE = 49,141 LBS
TOTAL WEIGHT INCLUDING SOIL = 59,175 LBS
TOTAL WEIGHT EXCEEDS BUOYANT FORCE – ADDITIONAL CONCRETE NOT REQUIRED

SOIL WEIGHT ONLY INCLUDES SOIL DIRECTLY OVER EXTENDED BASE
WEIGHT OF COMPONENTS NOT INCLUDED
CALCULATIONS ASSUME EMPTY TANK AND FULLY SUBMERGED TANK

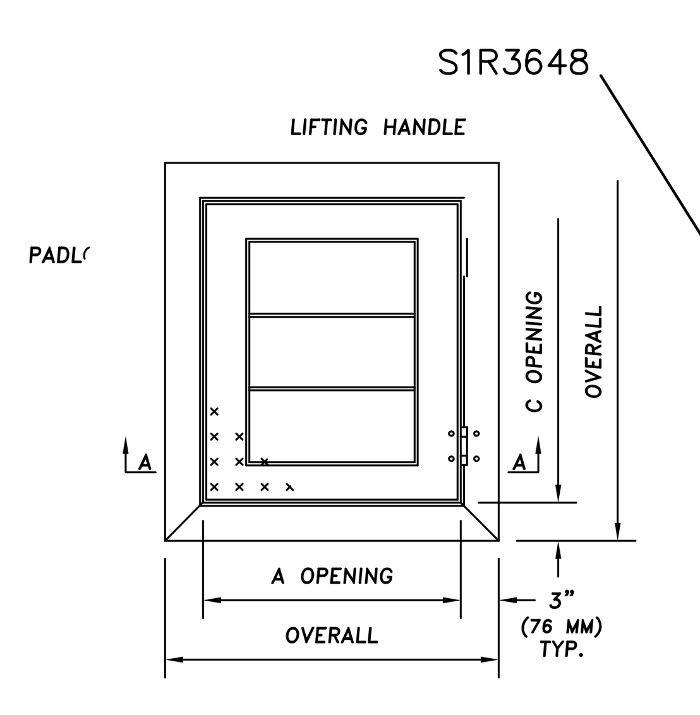
SERIES S1R ACCESS DOOR

HALLIDAY PRODUCTS
www.HallidayProducts.com
Phone 800–298–1027
Fax 407–298–4534
Sales@HallidayProducts.com

STANDARD FEATURES:

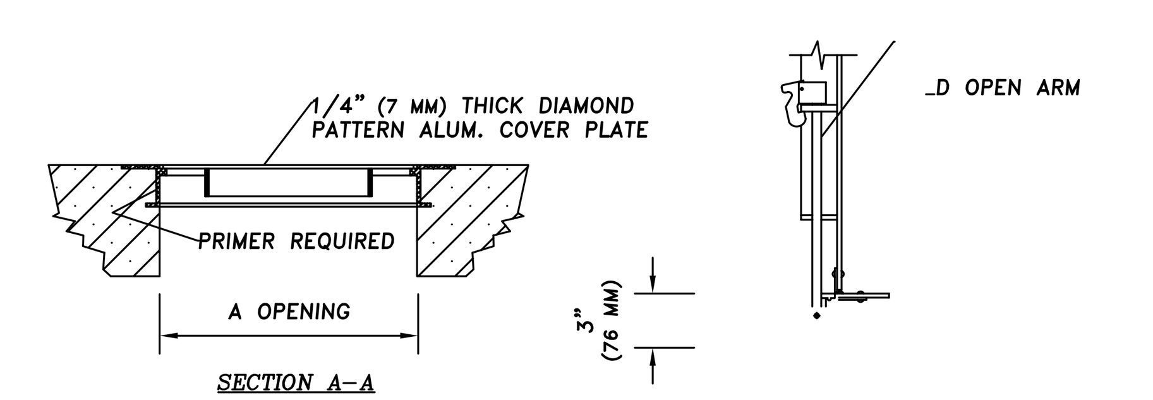
- AUTO–LOCK T–316 STAINLESS STEEL HOLD OPEN ARM WITH RELEASE HANDLE
- T–316 STAINLESS STEEL HINGES AND ATTACHING HARDWARE
- NON–CORROSIVE PADLOCK BAR
- SINGLE LEAF CONSTRUCTION
- 300 LBS. PER SQ. FT. LOAD RATING (1464 KG. PER SQ. METER LOAD RATING)
- EXTRUDED ALUMINUM FRAME
- RECESSED LIFTING HANDLE
- LIFETIME GUARANTEE

S1R3648

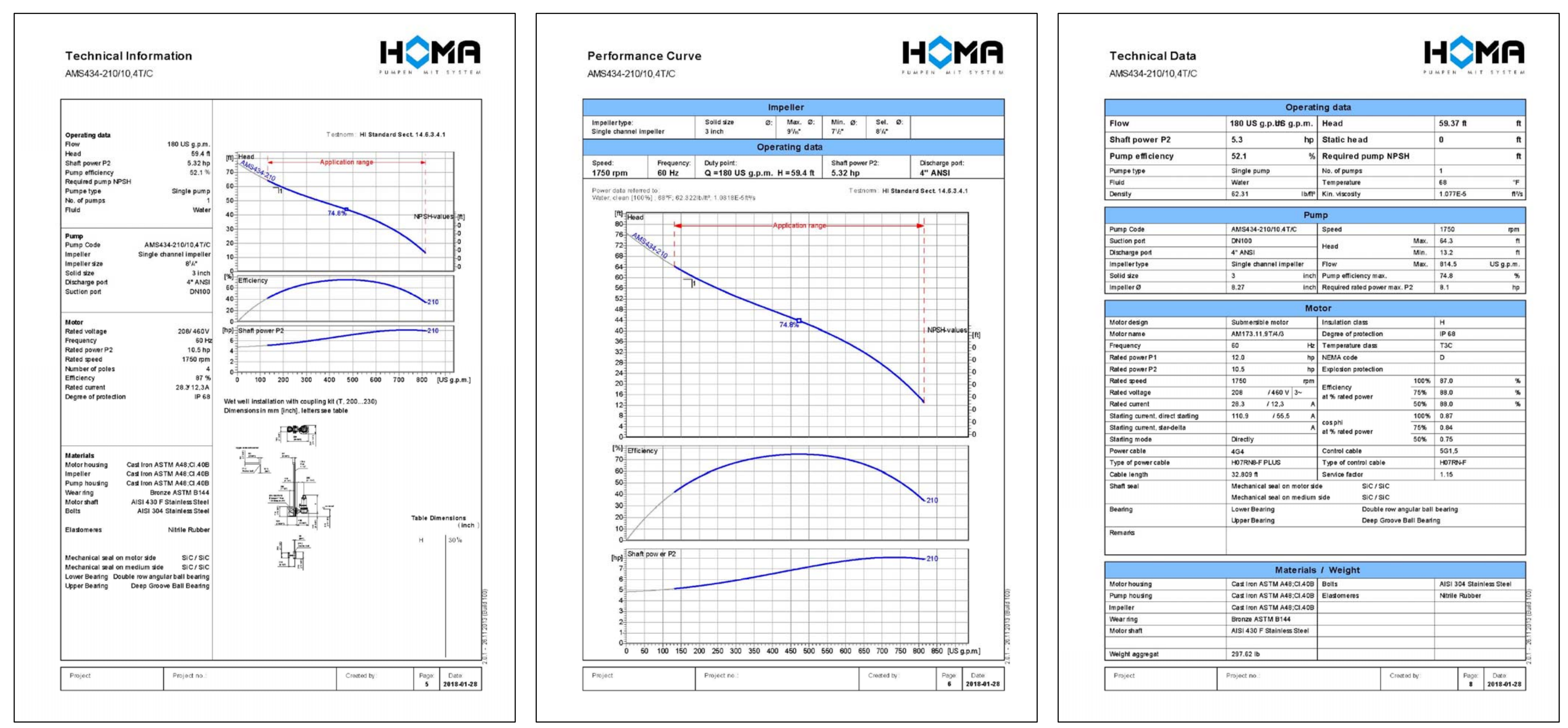


STANDARD SIZES

QTY.	MODEL NO.	A DIM. INCHES (MM)	C DIM. INCHES (MM)	UNIT WT. LBS. (KG.)
	S1R2424	24 (610)	24 (610)	37 (17)
	S1R2430	24 (610)	30 (762)	42 (19)
	S1R2436	24 (610)	36 (914)	48 (22)
	S1R2442	24 (610)	42 (1067)	55 (25)
	S1R2448	24 (610)	48 (1219)	61 (28)
	S1R3030	30 (762)	30 (762)	49 (22)
	S1R3036	30 (762)	36 (914)	57 (26)
	S1R3042	30 (762)	42 (1067)	64 (29)
	S1R3048	30 (762)	48 (1219)	71 (32)
	S1R3054	30 (762)	54 (1372)	79 (36)
	S1R3060	30 (762)	60 (1524)	87 (39)
	S1R3636	36 (914)	36 (914)	65 (25)
	S1R3642	36 (914)	42 (1067)	79 (36)
	S1R3648	36 (914)	48 (1219)	85 (39)
	S1R3654	36 (914)	54 (1372)	91 (41)
	S1R3660	36 (914)	60 (1524)	100 (45)
	S1R3666	36 (914)	66 (1676)	109 (49)
	S1R3672	36 (914)	72 (1829)	116 (53)
	S1R4242	42 (1067)	42 (1067)	93 (42)



HALLIDAY S1R3648 ALUMINUM HATCH



HOMA AMS434-210/10,4T/C 4" NON-CLOG WASTEWATER PUMP
5.3 HP, 208V, 3 PHASE, 4" DISCHARGE OPERATING AT 180 GPM @ 59 FT TDH

IMPORTANT NOTE: CONTRACTOR TO VERIFY AVAILABLE VOLTAGE AND LOAD REQUIREMENTS PRIOR TO ORDERING THE PUMPS AND CONTROLS. THIS PLAN ASSUMES AN AVAILABLE 3 PHASE, 208 VOLT SUPPLY.

MICHAEL W. ROBINSON, P.E., P.L.S.
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WASTEWATER PLAN

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 18994 MICHAEL W. ROBINSON

REVISIONS

NO.	DATE	DESCRIPTION	BY
1	02–22–22	REV FOR KDH COMMISSIONERS REVIEW	MWR

PROJECT:
OCEAN BREEZE TOWNHOMES
KILL DEVIL HILLS DARE COUNTY NORTH CAROLINA
902 SOUTH VIRGINIA DARE TRAIL

DATE: 01–31–22
SCALE: 1"=20'
DESIGNED: MWR
DRAWN: MWR
SHEET: 8 OF 10
CAD FILE: ocean view cottages–kdh–base.dwg
PROJECT NO: 051121

NORTH CAROLINA PROFESSIONAL SURVEYOR L-3154 MICHAEL W. ROBINSON 01-08-22