

**Thorough description of the design/recommendation or project/process studied.**

The Modulo Sperimentale Elettromeccanico project (MOSE) will consist of a series of 78 inflatable gates, 3.6 to five meters thick, 20 meters wide and 18 to 28 meters long. During the so called “high water phenomenon,” when tide level reach 110cm above the mean sea level, the gates will be inflated preventing the high water from entering Venice’s lagoons. This happens about four times a year. However the maximum difference between the city and the sea that the MOSE can allow is only two meters. Daily flooding will be taken care of by a small rise in the concrete level.

The gate will work much like a submarine, when water level rise above 110cm the gates can be activated forcing compressed air into them which will expel the water. This in turn will cause the gates to rise, preventing the higher water levels into the city.

**Brief summary of the situation/problem**

With Venice built on poor foundations and with a rising sea level the city has been sinking slowly into the Mediterranean Sea. In 1966 Venice had its worst flood with water levels reaching 2 meters about the average water line. Most recently since the late 90’s Venice has been experiencing daily flooding of their streets and buildings. Many of its canals are no longer capable of boat traffic. During high tide the water level raises allowing less than a meter of clearance. Flooding problems also force the city residents to abandon the first floors of many buildings.

**Overview of the available alternatives**

There are two alternatives to the Modulo Sperimentale Elettromeccanico project. First is raising the city itself this which mean raising the concert line. This is done by adding more material to the exciting sidewalks and bridges. The other alternative is too simple abandoning the city. Both of which are alternative that environmentalist will have you believe are better alternatives for the “delicate ecosystem” in Venice’s lagoons.

**Cost of design/recommendation, project/process, or alternatives**

The MOSE project was started in 2003 and will have an eight year construction period ending sometime in 2011. The total cost had been estimated a \$2.8 billion with a predicted annual cost after 2011 of \$9.2 million. The alternative of raising the concrete level would cost about the same. Italy has already ruled out the option of simply doing nothing.

The MOSE project will also be capable of preventing water damage to its building as opposed to simply raising the concrete level. Remember, raising the concrete level works only for the streets and sidewalks and not the buildings.

## Graphics illustrating design/recommendation, project/process, or alternatives



Image 1- rendering of MOSE in respect to Venice

Image 2- location of the three locations of MOSE

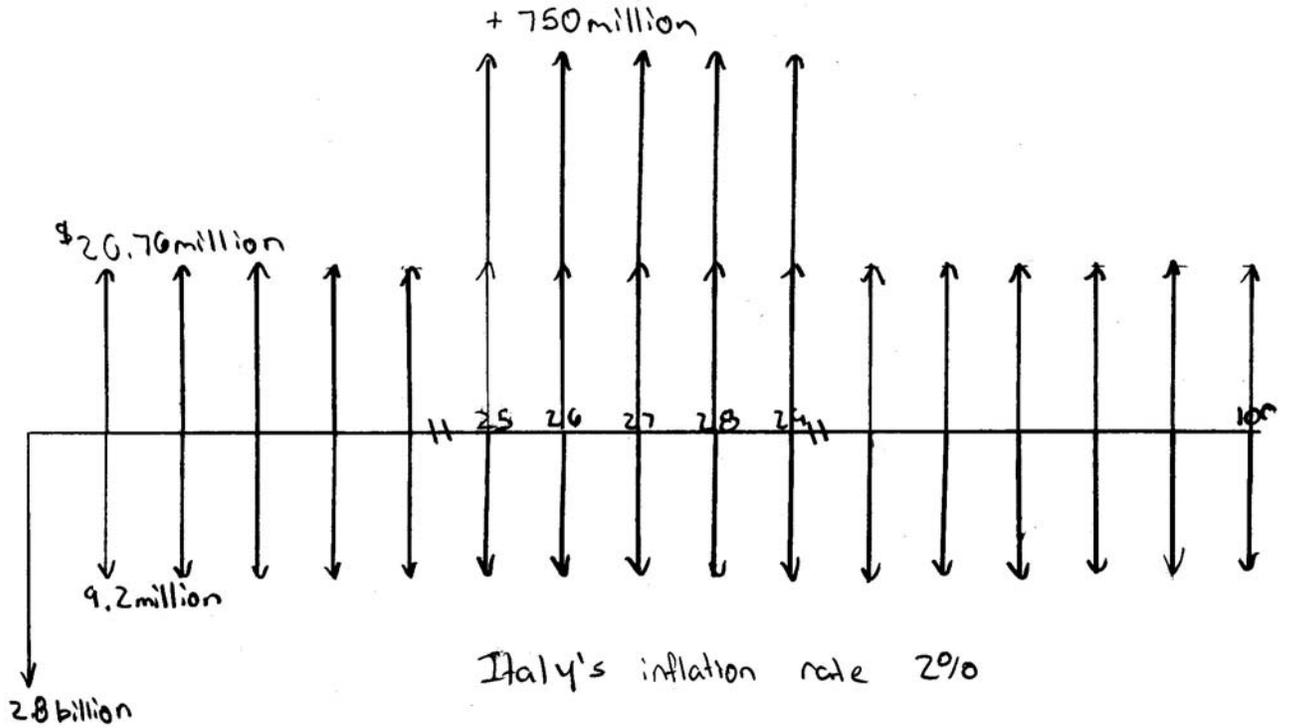
Image 3- Newly completed section of MOSE

Image 4- daily flooding which a small rise in the concert level.

### Other

The City of Venice founding date 452 AD has a population of approximately 600,000. The city is rich in historical architecture and art many of which are considered priceless.

Cost of project



\$2.8 billion construction cost

\$9.2 million Maintenance & Management

\$5.74609 million damage to property ever year

\$750 million Assuming that only tourism jobs are lost and it happens all at once Italy will have to pay 25,000 people \$30,000 a year for about 5 years average welfare time

\$15 million In tourism income

$$\begin{array}{r}
 20.76 (P/A, 3, 100) (31.599) \\
 750 (P/A, 3, 5) (P/F, 3, 24) 4.580 .4919 \\
 - 9.2 (P/A, 3, 100) (31.599) \\
 \hline
 - 2.8 \text{ billion} \\
 - 7.45 \times 10^8 (A/P, 3, 100) .0316 = \$24 \text{ million}
 \end{array}$$

The cost per year is projected at \$24 million; however this number does not take into account the value of the city itself, the architecture, the art and any other historical value that the city may have.