CHAPTER 31

GROINS AND EFFECTS - MINIMIZING LIABILITIES

Omar J. Lillevang
Consulting Engineer, Los Angeles, California

ABSTRACT

Wave and sand movement conditions must be right for a coastal groin to produce the beneficial effects it was built to achieve. Some groins produce no shoreline improvement; some groins prove harmful; some that act beneficially also cause harm elsewhere, and disputes follow. Design data are sparse, so experience and judgment become important design skills to a greater degree than in most engineering problems. Court decisions are described which, from the engineering standpoint, seem opposite in effect where physical conditions were similar. Conclusion is made that the engineer who undertakes projects including seacoast groins needs legal counsel, special engineering knowledge and experience, and a healthy respect for the continuing acceptability of the client's seacoast groins to neighboring proprietors.

INTRODUCTION

There are more theories concerning the effects groins have on shorelines than there are people who have given analytic consideration to these matters. There are more individuals who are certain a groin will be beneficial than there are engineers whose experience tells them that one does not always achieve unmixed blessings when a groin is placed on a coastline.

Some coastal groins have been built and no effect on the shorelines has been noted, either good or bad. Some have been built that caused beneficial accretions of beach, but the accreted lands were found to be the property of others rather than being owned by those who paid for the groin. Where desired accretions have been attained there have often been erosions nearby that offset the benefit. Under unusual but possible site conditions, beach erosion could result because of a groin installation, even though the groin had not caused any beneficial effect as intended.

All of the troublesome aspects of groin effects should be kept clearly in view by the engineer who will consider the advisability of an installation, but by no means should the troublesome aspects be considered as always insurmountable. When natural circumstances are right, and they are competently appraised, then groin installations can serve their intended purpose with no related adverse effects. Competence in appraisal, then, may

be the key to successful groin installations. Wallace L. Chadwick, President, ASCE, has written, "...Because nature is so much involved, many civil engineering structures must be designed without complete data. In such cases, reliance must be placed heavily on judgment and experience. For this reason, --civil engineering education must afford a sound understanding of the successes and failures of the past, as distinct from scientific and engineering fundamentals." Consistent with the continuing nature of engineering education, it is appropriate to examine some coastal problems that have occurred and where groins were alleged to be the cause, to record what was done, and discuss how the disputes they caused might have been minimized or avoided.

In the present context, a groin is any structure that is aligned generally in an onshore-offshore direction, reaching to or crossing the borders of a lake, sea or ocean and which is intended to, or in fact does:

(a) retain a beach which would otherwise be lost by alongshore erosive effect of waves or currents, or both; or,

(b) intercept sand or shingle that is moving alongshore under the effect of waves or currents, or both, and thereby causes aggradation of the foreshore.

LITIGATION OVER GROINS IN SANTA BARBARA

Two lawsuits that have been fought over eroded beach properties in the Santa Barbara area of California are worthy of comparison. The writer is not a lawyer, so his descriptions of the cases should be read with the understanding that they may well be imperfectly written from the legal standpoint. The discussion is not, nor must it be read as, legal advice. The main purpose is to demonstrate to engineer readers, and other laymen to the law, that legal subtleties are such that one should not only be aware of them, but should also seek a lawyer's qualified guidance. Otherwise works of engineering success may be nullified because the legal implications were not foreseen. The two cases referred to were over physical facts that were virtually identical, but the outcome of the suits were almost exactly opposite.

MIRAMAR COMPANY vs. CITY OF SANTA BARBARA

Under the definition of a groin that was given above, most jetties or breakwaters that are built out from a sandy shoreline become groins. The breakwater forming Santa Barbara Harbor, California is a large scale example of this. Although it was not intentional, that breakwater in fact

intercepted so much sand that was moving from west to east in the littoral zone that the upcoast beach was widened nearly 700 feet in three years. In that relatively short length of time approximately 25 acres of new land was created upcoast of Santa Barbara Harbor. Owners of oceanfront properties east of Santa Barbara Harbor shortly charged that their beach lands were being cut away by the sea because Santa Barbara Breakwater was intercepting and trapping littoral drift that otherwise would have kept their frontage supplied with sand.

Miramar Company, owner of a large resort hotel with extensive eroded ocean frontage, sued the City of Santa Barbara, seeking compensation because the hotel's beach property had been reduced in size by erosion, left in a rocky condition where formerly it was sandy, and the resort value of the property had been diminished. Compensation was sought from the City because it was the owner of Santa Barbara Breakwater, which breakwater, acting as a groin, had intercepted the sand that formerly nourished the hotel frontage, keeping the beach extent in balance. The trial court decided that the statutory period within which action had to be taken had expired. That decision was taken to the Supreme Court of California on appeal.

Six of the seven Supreme Court justices addressed themselves to the original complaint in the suit. Their opinions took note that beach sand eroded by obliquely breaking waves, and carried away downcoast, is constantly replenished by sand similarly eroded from the adjoining upcoast frontage. They also recognized that if the sand coming from upcoast is intercepted, and the waves therefore cannot bring it along to replenish the material that the waves continue to remove from beaches downcoast from the intercepting structure, then the downcoast beach will recede. The Court understood that nearly all waves breaking obliquely on the beaches in the Santa Barbara vicinity move sand from west to east; thus, that Santa Barbara Breakwater, preventing large quantities of sand from moving eastward toward Miramar Hotel, had caused progressive erosion of the hotel's beach. Six members of the Supreme Court chose to examine the merits of the plaintiff's view, that the hotel property was damaged as a consequence of the interception of large volumes of sand by the City's breakwater. The Chief Justice prepared an opinion, in which two Associate Justices concurred, stating among other things that the hotel company had the right to erect works to defend its property from the inroads of the ocean, but had not done so. This right of the hotel company to defend its property had not been taken away by the City. Further, the City as an arm of the State, had the right to use the publicly owned tidelands for the public's benefit, particularly navigation, and consequential damage to private entities would not alter that right. Thus, when the right exists, the law apparently does not require that individuals who are damaged be compensated. In legal latin, this is the principle of damnum absque injuria

translatable as "damage without unjust treatment", or "damage without violation of the rights of individuals". The three Justices therefore ruled that the City was not required to restore the eroded beach, nor to take any measures to arrest further losses. They concluded that the trial court should not be required to hear the lawsuit. Three Associate Justices dissented, concluding the suit should be tried by the Superior Court. The tie vote was decided by the seventh Justice. His opinion did not discuss the merits of the original complaint, but expressed concurrence with the trial court's ruling that the statute of limitations was applicable. Thus, by a 4 to 3 division of the Supreme Court, the appeal by Miramar Company was lost. Legal writers refer to the opinion of the Chief Justice and his two concurring Associates as the "Main Opinion". The attorneys with whom the writer has discussed the case generally refer to it as the existing law in California, resting on the damnum absque injuria principle.

KATENKAMP vs. UNION REALTY COMPANY

In 1925, very near the Miramar Hotel and two years before Santa Barbara Breakwater was started, another oceanfront land owner built a groin, after first acquiring a permit from the State of California to do so. Four years later the same owner, Union Realty Company, added a second groin in front of the property; this was at about the time Santa Barbara Breakwater began to intercept sand noticeably. Late in 1932 the owners of oceanfront lands east of the Union Realty Company groins brought a series of suits and were able to get an order from the Court requiring the owner to remove both groins and pay damages to the plaintiff, Katenkamp and others. The defendant groin owner, Union Realty Company, appealed the trial court's decision, but was not successful, so the groins were taken out. In this case the owner of the groins argued he had built them to protect his land from the inroads of the sea, which he regarded as a common enemy threat to his property. He argued further that the groins did not deny the plaintiff his rights to also build protective works and therefore the damnum absque injuria principle applied. The court rejected Union Realty Company's claim that the groins were built as a defense against the sea. It ruled that the real purpose was property improvement; that the groins did in fact improve the property, but did so by causing sand to be removed from the plaintiff's beach lands. It was the Court's decision that the owner of the groins had no right to take the plaintiff's sand and thus damage the plaintiff's property. The Court ordered the defendant to remove his groins and awarded damages to the plaintiff. An appeal was filed but was rejected. The groins were removed and damages were paid.

LEGISLATIVE RELIEF FROM LEGAL TECHNICALITY
THE EQUITY APPROACH

Before World War II the City of Oceanside, in southern California,

had established itself as an attractive beach town for vacationers, largely because of its wide, gradually sloping beach. A military harbor was built during the war just upcoast from the city. The harbor was entirely artificial, being dredged inland from a straight reach of sandy coast. Its entrance channel was flanked by two jetties. Before long these were acting as groins and trapped large quantities of sand. Nearly three million cubic yards of accretion upcoast from the jetties created about 40 acres of new land, but all at the expense of the beach in front of the city. The City identified the accretions at the military harbor as the cause of the City's beach being lost, and asked that the United States replace the beach. The answer, in due course, was to the effect that although the principle cause of the erosion was admittedly the accretions at the harbor jetties, existing law relative to beach erosion would limit the United States to paying only one-third of the cost of restoring the beach; Oceanside would have to pay the remaining two-thirds. Litigation was considered, but Federal officials suggested that damnum absque injuria might apply, citing the Miramar v. Santa Barbara case and others. The City chose not to test the theory at that time, but continued to seek relief by presenting comprehensive reports to the Federal government in which the whole history of accretion and erosion was set forth and the practical problems of achieving relief through the courts were acknowledged. The reports argued, however, that even if the Federal position were legally correct it was certainly not equitable. The report asked for fairness, or equity, from the United States.

The report has become known as the "Equity Report", because when it was brought to the attention of Congress by the Army Corps of Engineers, the Congress ordered that the Army Chief of Engineers advise it what aid should be given to Oceanside "...in equity, without regard to limitations of Federal law applicable to beach erosion control". The outcome was a dredging program in which the United States restored the Oceanside beach entirely at Federal expense, by dredging from lands the City acquired for that purpose.

SUBTLETIES AND PRUDENT ENGINEERING

The engineer who undertakes to design a groin should keep in mind that the law is subtle, and to him, perhaps, obscure. He is prudent in informing himself on its operation but foolish if he attempts to interpret it, unless he also is a lawyer. He should advise his client or employer of the physical conditions that may result if a groin is built and urge that the legal implications thereof be evaluated by a lawyer. Legally defensible conditions may well exist, though damage actually is caused. In that event, at least two concerns arise for the engineer: first, he has an ethical responsibility to be constructive and must apply his talents toward this end with attention to avoiding destruction of properties, which destruction would be a consequence of the improvements; second, the defense of a

lawsuit is costly even when successful, and though the attorney who counsels that a legally defensible condition exists may be right, there can be, and often are, others who will file suit because of an opposite viewpoint.

The writer cannot escape the conclusion that careful, experienced judgment, and plans that attempt to foresee and avoid any damage to others that he would not want to endure himself, are jointly the really prudent ways to avoid liabilities. Groins that are built only to defend shoreside properties against erosion might be placed so they only retain the beach that is already there. Groin projects that are built to extend shoreside properties seaward might include importation of suitable fill material that the groins can retain, rather than letting accretions occur by interception of natural sand flows on which neighboring beaches rely for their equilibrium. Structures such as harbor jetties that could incidentally act as groins probably should not be built unless the plans for the harbor include means for removing accretions and restoring them to downcoast beaches which otherwise could be expected to suffer progressive erosion.

Repetition is warranted. To minimize disputes and to minimize risks for himself, and for his client or employer, the engineer should:

1. Apply competent experience and judgment with due care;
2. Attempt to foresee, and provide measures to avoid, potential damage to others that he would not himself want to suffer;
3. Urge his client or employer to seek or himself consult legal counsel and weigh carefully such advice in planning;
4. Withdraw from further association with a project where engineering analyses show, or informed legal counsellors advise, that indefensible conditions would develop.

Although presented in the context of shoreline problems related to coastal groins, these principles are actually applicable to good ethical practices in any field of endeavor.