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UNITED STATES PATENT AND TRADEMARK OFFICE

Trademark Trial and Appeal Board

Kistner Concrete Products, Inc.

v.

Contech Arch Technologies, Inc.

Cancellation No. 92048733

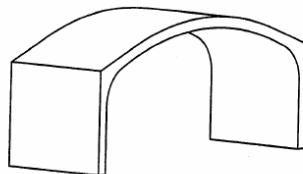
Roberta Jacobs-Meadway of Eckert Seamans Cherin & Mellott
for Kistner Concrete Products, Inc.

Scott A. King and Victoria Nilles of Thompson Hine for
Contech Arch Technologies, Inc.

Before Quinn, Walsh and Ritchie, Administrative Trademark
Judges.

Opinion by Quinn, Administrative Trademark Judge:

Kistner Concrete Products, Inc. filed, on December 28,
2007, a petition to cancel a registration on the
Supplemental Register owned by Contech Arch Technologies,
Inc. of the designation shown below



for "precast concrete bridge unit for constructing a bridge or culvert" in International Class 19.¹ The registration includes the following description: "The mark consists of the configuration of a one-piece open bottom bridge unit, with parallel spaced vertical side walls connected by an arched top wall and having sharp outside corners and a width substantially greater than its length." A copy of the specimen submitted with the Section 8 affidavit of continued use is reproduced below.



As grounds for cancellation petitioner alleges that the registered mark is functional under Section 2(e)(5) of the Trademark Act, 15 U.S.C. §1052(e)(5), and Section 23(c) of the Trademark Act, 15 U.S.C. §1091(c).²

¹ Registration No. 2670588, issued December 31, 2002; Section 8 affidavit filed and accepted.

² The registration sought to be cancelled is on the Supplemental Register. Section 24 of the Trademark Act, 15 U.S.C. §1092, provides the authority for cancellation of Supplemental Register registrations. As discussed *infra*, although the analysis of functionality under Section 2(e)(5) is relevant to a decision about the functionality under Section 23(c) of marks on the Supplemental Register, Section 2(e)(5) does not provide a basis for cancellation or refusal of a registration on the Supplemental Register.

Petitioner more specifically alleges that it is engaged in the business of manufacturing precast concrete products, including precast concrete four-sided or box culverts, three-sided or ridged frame culverts, and parabolic arches which are used in the construction of bridges and/or culverts; that these precast products are viable, economically advantageous products for use in the construction of bridges and/or culverts because they allow for higher quality control with respect to the concrete products, less cycle time for the construction projects and greater cost efficiency for the construction projects; that the functional nature of the registered mark is demonstrated by respondent's five registered utility patents, now expired, that include an image of the configuration now sought to be cancelled; that shortly prior to the expiration of each of the patents, respondent filed the underlying application that matured into the involved registration; that the design of the registered configuration allows respondent's goods to have greater utility, efficacy and cost-efficiency; that the features of the registered mark, as described in the registration, are essential to the use of respondent's goods and affect the cost and/or quality of respondent's goods; and that petitioner is at a competitive disadvantage because it cannot use the configuration

registered by respondent despite the expiration of respondent's utility patents.

Respondent, in its answer, denied the salient allegations in support of the claim of functionality.

The Record

The parties essentially agree on the contents of the record, except to the limited extent indicated below. The record consists of the pleadings; the file of the involved registration; testimony (with related exhibits) taken by each party; a discovery deposition with related exhibits made of record through petitioner's notice of reliance; and copies of design patents introduced by way of respondent's notices of reliance. The parties also stipulated "that documents produced in response to requests for production may be offered into evidence without further evidence of authentication"; pursuant thereto, a large number of documents are of record.³ The parties further stipulated to the introduction of an additional discovery deposition.⁴ Both parties filed briefs.

³ The documents are identified by Bates numbers (beginning with the letters "CT."). Some of these documents also were part of exhibits introduced during depositions. This opinion references the documents as appropriate.

⁴ The only bone of contention is respondent's objection to the deposition of Manny B. Pokotilow taken by petitioner as rebuttal testimony; respondent made the objection at the deposition and maintained it in its brief. Respondent contends that Mr. Pokotilow was offered as an expert witness, yet petitioner failed to previously identify him as an expert during discovery. In addition to the alleged failure to timely identify the deponent as an expert witness, respondent asserts that the testimony

The testimony referenced above includes expert testimony. More specifically, petitioner took the testimony of Simon Harton and Bryan Trimbath, both employed by a third party as civil engineers specializing in structural engineering; and respondent took the testimony of Bruce Stoner, a patent attorney.⁵ Neither side objected to the qualifications of the deponents as experts; we likewise have considered the witnesses to be experts in their fields.

constitutes improper rebuttal. In making the objection, respondent also states the following: "It is not clear that [petitioner] still intends to rely on Mr. Pokotilow's testimony. [Petitioner] does not cite any of his testimony in its Brief. Nonetheless, to the extent that [petitioner] intends to rely on that testimony, [respondent] respectfully asks the Board to disregard it." (Brief, p. 5). Petitioner in response states: "Although [respondent] notes that [petitioner] did not cite Mr. Pokotilow's testimony in its brief, see [respondent] Br., 5, it nevertheless indulges in an objection to his testimony as not proper rebuttal testimony and not properly disclosed. See *id.*, 4. As [petitioner] does [sic] rely on Mr. Pokotilow's testimony in its trial brief or this reply, there is no need to further waste the Board's time with rebuttal." (Reply Brief, p. 11, n.3).

Petitioner is not relying on Mr. Pokotilow's testimony and, indeed, petitioner's briefs do not refer to this testimony. We view petitioner's statements (albeit with a typographical error as noted above) to be tantamount to a concession to the objection. Accordingly, the objection is sustained and we have not considered Mr. Pokotilow's testimony in reaching our decision.

⁵ Mr. Stoner had a long career at the U.S. Patent and Trademark Office, culminating in his appointment as Chief Administrative Patent Judge of the Board of Patent Appeals and Interferences. He is now in private practice with a law firm. Mr. Stoner's undergraduate degree is in aerospace engineering and, during his tenure at PTO as a patent examiner, "[t]he stuff that I was specifically handling most of the time was power conveyors and sheet feeding delivery." (Stoner dep., p. 72). Mr. Stoner testified that he has neither examined nor prosecuted a trademark application. (Stoner dep., p. 71).

The Parties

Petitioner has been engaged in the production of concrete products for over fifty years. Petitioner's product lines include pre-cast concrete bridges and culverts; these products account for about thirty percent of petitioner's sales. More specifically, petitioner produces box culverts, four-sided concrete structures; arch culverts, which are open bottom concrete structures; and three-sided rigid structures having flat-tops, which are open bottom culvert and bridge units.

Respondent is a direct competitor of petitioner. In the 1980's, respondent began licensing its then-patented technology to concrete precasting companies. Respondent does not sell or manufacture bridge units; rather it provides precasters with design and marketing assistance, and provides manufacturing and installation support in the field. Timothy Beach, a former president of respondent, current consultant to respondent and a design engineer of bridges, testified that the typical purchaser is a general contractor, although a project manager or cost estimator may make the final decision. (Beach disc. dep., p. 75). Its present precast product is called the CON/SPAN system. "More than 4,500 CON/SPAN® projects have been installed in 49 states, Canada, the Caribbean, Central and South America, Japan and Korea since 1986." (CT 000396).

After approximately fifteen years of utility patent protection, respondent filed, on September 17, 2001, the underlying application to register the mark at issue. Respondent filed the application "because we felt that people recognized the shape and we just kind of wanted to further document that." (Beach test. dep., p. 79). Respondent originally sought to register its mark on the Principal Register, but the trademark examining attorney refused registration on the ground of functionality. Respondent argued against the refusal, and then amended the application to seek registration on the Supplemental Register. The registration issued on December 31, 2002, that is, about one year prior to the expiration of respondent's utility patents. Although its trademark registration claims use since September 1983, respondent's license agreements covering the patents were silent as to any trademark rights in the arch-box culvert configuration. However, based on its trademark registration, respondent has since sought to enforce its mark against alleged competitors on six occasions. (Beach disc. dep., p.40).

The Goods

It is essential to grasp the use and purpose of the goods so as to determine functionality. Both parties manufacture precast concrete bridges and culverts. These products are technical in nature, and are designed by civil

engineers. According to Michael Kistner, petitioner's vice president and secretary, the construction of bridges with precast concrete elements is "relatively" new to the industry. (Kistner dep., p. 9). These products have been used in a variety of applications, including spanning waterways and roadways; pedestrian walkways; and underground containment. In one instance, a span was used at an airport overpass in Wilmington, Ohio, allowing an airplane taxiway to span a vehicle roadway below ("Structure is one of two designed to carry a fully loaded 747 cargo plane (900,000 lb.) over a relocated state highway."). (Contech trial ex. no. H-32, p. CT 0004000).

Mr. Beach testified that respondent's bridge systems are manufactured by pouring concrete into steel forms at an off-site precast facility. He identified several advantages to precast construction, including reduced cost, time savings, quality control and durability. A trade magazine article distributed by the National Precast Concrete Association (Kistner ex. no. H-1, document nos. CT 000100-101) discusses in detail the advantages of precast concrete. In making the case for this specific type of construction, the article states:

Precast concrete manufacturers offer a variety of short-span bridge systems. Designs include single-piece arch, two-piece arch and three-sided box. Each system has its own limitation on span length, span height and load capacity.

Another factor to consider is the weight of each bridge section that must be transported to the job site. Roadway load limits are usually the only factor that may restrict the size of these bridge sections, even though a precaster's facility may be able to produce larger sections.

The article goes on to address in more specific fashion the advantages of precast construction:

Superior Strength and Durability

The strength of precast concrete gradually increases over time and does not deteriorate when exposed to harsh environments as some other materials do...Studies have shown that precast concrete products can provide a service life in excess of 100 years.

Quality Control

Because precast concrete products typically are produced in a controlled plant environment, they exhibit high quality and uniformity. Problems affecting quality typically found on a job site - temperature, humidity, poor craftsmanship and material quality - are nearly eliminated in a plant environment.

Availability and Ease of Installation

Because precast concrete bridge sections are manufactured well in advance of installation, they are ready for transportation to the job site at a moment's notice. They are quickly set onto the bridge foundation in a matter of hours using a small crew and crane. Backfilling and overlaying can begin immediately rather than waiting several days for cast-in-place concrete to reach proper strength. Projects utilizing a precast concrete design can save weeks

or months over cast-in-place concrete construction.

Reduced Weather Dependency

Precast concrete increases job efficiency because weather will not delay production in the plant. In addition, weather conditions at the job site do not significantly affect the schedule. Conversely, forming and placing of concrete for cast-in-place construction can result in significant delays due to poor weather.

Aesthetics

Precast concrete short-span bridges can sometimes also include spandrel and wing wall panels with architectural finishes.

Environmentally Friendly

Precast concrete is non-toxic, environmentally safe and made from all-natural materials, making it an ideal material for use over and near natural waterways...Also, by utilizing a three-sided precast concrete bridge design, disturbance of creek and river beds is significantly reduced, allowing the water environment to return to normal more quickly than other alternatives.

Economical

Precast concrete bridges offer lower long-term costs when compared with other materials. Additionally, because precast bridges require significantly less construction time, overall project cost savings can be realized.

Mr. Kistner testified that box shape culverts are very efficient for short spans up to twenty-four feet; beyond that, an arch-box shape is the product of choice for spans up to sixty feet. (Kistner dep., p. 15).

The Arguments

Petitioner claims that the registered trademark shape is functional. This functionality, petitioner argues, is revealed by respondent's expired utility patents, which claim and disclose functional advantages of the arch-box culvert, and which establish it as one of a few superior designs, particularly in applications requiring longer spans and lower rises. Petitioner also points to touting of the advantages of respondent's design, and to its cost efficiency. Petitioner further contends that

[respondent's] attempt to claim trademark rights in the Arch-Box Culvert is a blatant attempt to extend its expired patent monopoly over a functional culvert design by way of trademark law. [Respondent] did not rely on a trademark claim in the Arch-Box Culvert until after [respondent's] patents expired. However, the protection afforded by a trademark claim in the [respondent's] Arch-Box Culvert is more than a mere extension of the expired patents because the scope of the trademark is broader than the scope of the patents.
(Brief, p. 35)

Because of the existence of respondent's registered trademark, issued shortly before the patents expired, petitioner maintains that it is not able to produce culverts resembling respondent's arch-box culvert without risk that respondent will sue to enforce its purported trademark rights. According to petitioner, it is unable to effectively compete for applications in which the arch-box

culvert shape is the most efficient and cost-effective culvert, or for jobs that specify a preference for the arch-box culvert. Petitioner also points out that during the years that respondent licensed its patent rights in its precast concrete bridge units, the license agreements, although granting rights in patents, word marks and trade secrets, made no mention of any trademark rights in the arch-box shape of the units.

Respondent argues that its patents did not claim the features of the registered trademark shape; its patents, according to respondent, were defined by specific dimensional ratios and were not open to extension through the doctrine of equivalents. According to respondent, "[t]he combination of the trademarked features of the Registered Trademark Shape are mere incidents, with its vertical sidewalls and arched top connected by a thickened concrete section in CON/SPAN's distinctive and arbitrary haunch."⁶ (Brief, p. 30). Additionally, respondent asserts that its advertising touts attributes common to precast culvert systems of various designs and, for that matter, to any arch-box culvert used in the road and bridge design construction industry, not just the registered trademark shape; that there are competing alternative designs in the

⁶ "Haunch" is "a general term used to describe an increased thickness at a corner of a structure." (Beach test. dep., p. 32).

market today, and a variety of other functionally equivalent arch-box designs are available for use; and the lower cost of manufacturing of respondent's culverts does not result from the registered trademark shape, but rather from using a precast concrete system. Respondent, in concluding that its trademark is not functional, states the following:

The functional attributes upon which [petitioner] relies are the benefits of any arch-box design. The combination of the vertical sidewalls and arched top - found in any arch-box design - react against the soil to distribute the load. The shape of the corner does not "extend" the soil structure interaction - it is not even considered in evaluating the soil structure interaction. The haunch - the entirety of the thickened corner - adds stiffness to the structure because of the additional concrete, not because of the shape of the interior surface of the corner. [Respondent] has never claimed a trademark in all arch-box culverts, only those with its arbitrary combination of features. (Brief, p. 40).

Petitioner, as the plaintiff in this inter partes proceeding, bears the initial burden of establishing a *prima facie* case of functionality. If such *prima facie* case is established, the burden then shifts to respondent, as the defendant in this proceeding, to prove nonfunctionality. See *Valu Engineering Inc. v. Rexnord Corp.*, 278 F.3d 1268, 61 USPQ2d 1422, 1429 (Fed. Cir. 2002); and *In re Howard Leight Industries LLC*, 80 USPQ2d 1507, 1509 n.7 (TTAB 2006). Functionality is a question of fact whose determination

depends on the totality of the evidence. *Valu Engineering Inc. v. Rexnord Corp.*, 61 USPQ2d at 1424.

Standing

Petitioner has demonstrated a real interest in this proceeding given that it is a competitor in the bridge and culvert industry. See *Ritchie v. Simpson*, 170 F.3d 1092, 50 USPQ2d 1023 (Fed. Cir. 1999); and *Plyboo American, Inc. v. Smith & Fong Co.*, 51 USPQ2d 1633 (TTAB 1999).

FUNCTIONALITY

Before October 30, 1998, there was no specific statutory reference to functionality as a ground for refusal, or for opposition or cancellation. Effective October 30, 1998, the Technical Corrections to Trademark Act of 1946, Pub. L. No. 105-330, §201, 112 Stat. 3064, 3069, amended the Trademark Act to expressly prohibit registration on either the Principal or Supplemental Register of functional matter. See generally TMEP §1202.02(a)(i) (7th ed. 2010) ("These amendments codified case law and the longstanding USPTO practice of refusing registration of functional matter.").

Section 2(e)(5) of the Trademark Act, 15 U.S.C. §1052(e)(5), provides that registration of a configuration on the Principal Register may be denied "if it comprises any matter that, as a whole, is functional."

As indicated earlier, respondent's mark is registered on the Supplemental Register. In the past (and prior to the amendment to the statute), applications for product configurations sought to be registered on the Supplemental Register have been denied on the basis of functionality. *See, e.g., In re Virshup*, 42 USPQ2d 1403 (TTAB 1997). The Board has rejected the argument that a product configuration that is functional can still be capable of distinguishing one seller's goods from those of another and therefore is registrable on the Supplemental Register. *In re Controls Corp. of America*, 46 USPQ2d 1308, 1311-12 (TTAB 1998) (the principles of the *Morton-Norwich* case are also applicable to determining registrability on the Supplemental Register). The amendment to Section 23(c) codified this practice, specifically providing that functional shapes are not registrable on the Supplemental Register. Section 23(c) of the Trademark Act, 15 U.S.C. §1091(c), as amended, provides, in pertinent part, that for purposes of registration on the Supplemental Register, a mark may consist of "any matter that as a whole is not functional." *See generally* J. T. McCarthy, McCarthy on Trademarks and Unfair Competition, 7:95 (4th ed. 2010).

In view of the above, it is clear that the same legal principles and analysis apply to a determination of functionality, whether on the Principal Register or

Supplemental Register. See *ERBE Elektromedizin GmbH v. Canady Technology LLC*, ___F.3d___, 97 USPQ2d 1048, 1055-58 (Fed. Cir. 2010).

The Supreme Court has addressed the issue of functionality in several cases both before and after the statutory change.

The functionality doctrine is intended to encourage legitimate competition by maintaining the proper balance between trademark law and patent law. As the Supreme Court observed in *Qualitex Co. v. Jacobson Products Co.*, 514 U.S. 159, 34 USPQ2d 1161, 1163-64 (1995):

The functionality doctrine prevents trademark law, which seeks to promote competition by protecting a firm's reputation, from instead inhibiting legitimate competition by allowing a producer to control a useful product feature. It is the province of patent law, not trademark law, to encourage invention by granting inventors a monopoly over new product designs or functions for a limited time, after which competitors are free to use the innovation. If a product's functional features could be used as trademarks, however, a monopoly over such features could be obtained without regard to whether they qualify as patents and could be extended forever (because trademarks may be renewed in perpetuity). That is to say, the Lanham Act does not exist to reward manufacturers for their innovation in creating a particular device; that is the purpose of the patent law and its period of exclusivity. The Lanham Act, furthermore, does not protect trade dress in a functional design simply because an investment has been made to

encourage the public to associate a particular functional feature with a single manufacturer or seller.

Product design may be protected and registered as a trademark subject to certain conditions. *TrafFix Devices Inc. v. Marketing Displays Inc.*, 532 U.S. 23, 58 USPQ2d 1001, 1004 (2001). The Supreme Court has consistently proceeded with caution in according trademark protection to product designs. In *TrafFix* the Supreme Court states: "And in *Wal-Mart*...we were careful to caution against misuse or over-extension of trade dress. We noted that product design almost invariably serves purposes other than source identification." *Id.*, citing *Wal-Mart Stores Inc. v. Samara Bros. Inc.*, 529 U.S. 205, 54 USPQ2d 1065 (2000). The functionality doctrine guards against the "misuse" or "over-extension" of trademark protection for product designs. See generally J. T. McCarthy, McCarthy on Trademarks and Unfair Competition, 7:64 (4th ed. 2010).

The design of a product is functional and cannot serve as a trademark

"if it is essential to the use or purpose of the article or if it affects the cost or quality of the article."
(citing *Qualitex Co. v. Jacobson Products Co.*, 514 U.S. 159, 34 USPQ2d 1161 (1995), quoting *Inwood Laboratories, Inc. v. Ives Laboratories, Inc.*, 456 U.S. 844, 214 USPQ 1, 4 n.10 (1982)). Expanding upon the meaning of this phrase, we have observed that a functional feature is one the "exclusive use of [which] would put competitors at

a significant non-reputation-related disadvantage.”

TraFFix Devices Inc., 58 USPQ2d at 1006.

In analyzing whether the registered subject matter is functional, we determine whether the design of the “precast concrete bridge unit for constructing a bridge or culvert” is functional, not whether the bridge unit itself is functional or whether the process of precasting the concrete bridge is functional. And, we consider the design as described in the trademark: “The mark consists of the configuration of a one-piece open bottom bridge unit, with parallel spaced vertical side walls connected by an arched top wall and having sharp outside corners and a width substantially greater than its length.” Accordingly, we must determine whether the design of the bridge unit is essential to its use or purpose or if it affects the cost or quality of the product, that is, whether allowing the trademark registration to continue to exist will hinder competition. *In re Morton-Norwich Products, Inc.*, 671 F.2d 1332, 213 USPQ 9, 12-15 (CCPA 1982). In other words, the issue is whether the design of the product works better in the configuration at issue. *In re R.M. Smith, Inc.*, 734 F.2d 1482, 222 USPQ 1, 3 (Fed. Cir. 1984).

In determining whether the product configuration is functional, we focus on whether the configuration mark as a whole is functional. Section 23(c) of the Trademark Act.

The terminology "as a whole" existed under prior case law with respect to registration of marks on both the Principal Register and the Supplemental Register, and refers to "the entirety of the mark itself." *Valu Engineering Inc. v. Rexnord Corp.*, 61 USPQ2d at 1428, n.6. Case law also makes clear that the inclusion of a nonfunctional feature does not make an otherwise functional configuration distinctive and therefore registrable. *In re Bose Corp.*, 476 F.3d 1331, 81 USPQ2d 1748 (Fed. Cir. 2007). As the Federal Circuit has stated:

The case law of this court and its predecessor also establishes that before an overall product configuration can be recognized as a trademark, the *entire* design must be arbitrary or non de jure functional. *Petersen Mfg. Co. v. Central Purchasing Inc.*, 740 F.2d 1541, 1550, 222 USPQ 562, 569 (Fed. Cir. 1984); *In re Minnesota Mining and Mfg. Co.*, 335 F.2d 836, 142 USPQ 336 (CCPA 1964). The reason for this is self-evident - the right to copy better working designs would, in due course, be stripped of all meaning if overall functional designs were accorded trademark protection because they included a few arbitrary and nonfunctional features. See *Petersen Mfg. Co.*, 740 F.2d at 1550, 222 USPQ at 569; *In re R.M. Smith*, 734 at 1484, 222 USPQ at 2-3.

Textron, Inc. v. U.S. International Trade Commission, 753 F.2d 1019, 224 USPQ 625, 628-29 (Fed. Cir. 1985). See also *In re Vico Prods. Mfg. Co., Inc.*, 229 USPQ 364, 368-69 (TTAB 1985), *request for reconsideration denied*, 229 USPQ 716

(TTAB 1986). The terminology "as a whole" in the statute does not mean that one can avoid a finding of functionality simply because the configuration includes a nonfunctional feature. The phrase is used to show that merely because a configuration may have utility or a function does not make it functional and therefore unregistrable. For the configuration to be functional, it must be shown not just that the item has a function, but also that the performance of that function is enhanced by the particular configuration in which the configuration is executed. See *In re Peters*, 6 USPQ2d 1390 (TTAB 1988). See also J. T. McCarthy, McCarthy on Trademarks and Unfair Competition, §7:70 (4th ed. 2010). The key is the degree of the utility of the configuration, and the degree of utility is determined on the basis of the superiority of the configuration in question. *In re Virshup*, 42 USPQ2d at 1405.

As set forth by the Federal Circuit, a determination of functionality generally involves consideration of the following factors:

1. The existence of a utility patent that discloses the utilitarian advantages of the registered design;
2. Advertising by the registrant that touts the utilitarian advantages of the registered design;
3. Facts pertaining to the availability of alternative designs; and

4. Facts pertaining to whether the registered design results from a comparatively simple or inexpensive method of manufacture.

Valu Engineering Inc. v. Rexnord Corp., 61 USPQ2d at 1426, citing *In re Morton-Norwich Products, Inc.*, 213 USPQ at 15-16.

Accordingly, we turn to analyze the issue of functionality using the four factors set out in *Morton-Norwich*.

Utility Patents

As stated by the Supreme Court in *TraFFix Devices Inc.*, 58 USPQ2d at 1005:

A prior patent, we conclude, has vital significance in resolving the trade dress claim. A utility patent is strong evidence that the features therein claimed are functional. If trade dress protection is sought for those features the strong evidence of functionality based on the previous patent adds great weight to the statutory presumption that features are deemed functional until proved otherwise by the party seeking trade dress protection. Where the expired patent claimed the features in question, one who seeks to establish trade dress protection must carry the heavy burden of showing that the feature is not functional, for instance by showing that it is merely an ornamental, incidental, or arbitrary aspect of the device.

Thus, the existence of a utility patent for the features for which trademark protection is sought is often critical to a determination that the features are

functional. Furthermore, we are not limited to review of the claims in a patent in determining functionality, but we may also consider the disclosures in the patent. See *In re Bose*, 772 F.2d 866, 227 USPQ 1 (Fed. Cir. 1985); and *In re Howard Leight Industries LLC*, 80 USPQ2d at 1511, quoting J. T. McCarthy, McCarthy on Trademarks and Unfair Competition, §7:89.1 (4th ed. 2006) that “[i]t is proper to look at the disclosure (as distinguished from the claims) in a utility patent as evidence of the functionality of a shape. The Trademark Board has held that each embodiment of the invention described in a utility patent is equally functional for purposes of trademark law,” citing *In re Bose*, supra.

The record includes five utility patents, all owned by the same entity and now expired, for “Precast Concrete Culvert Section”: Registration Nos. 4,595,314; 4,687,371; 4,797,030; 4,854,775; and 4,993,872. The earliest of the patents issued in 1983 on the basis of inventions made by an engineering firm, whose members included William Lockwood. Mr. Lockwood went on to develop respondent’s present bridge unit as “a hopefully more cost-effective solution to small bridge needs.” (Journal of Management in Engineering, July 1990; Harton dep., ex. no. 1, attachment J). In 1988, Mr. Lockwood spun off the Con/Span business unit as a new and independent company - Con/Span Culvert Systems, Inc. This

entity is a predecessor in interest of respondent. The parties have referred to the patents as respondent's patents; likewise, we will refer to the patents as being owned by respondent.⁷

The original application issued as Patent No. 4,595,314 for "Precast Concrete Culvert Section"; the subsequent applications claim priority from this patent. Mr. Stoner described a "continuation application" as follows:

A continuation application is an application that has the same specification as an earlier application and it discloses and claims nothing that wasn't supported in the earlier application. It might be to a further refinement that was already disclosed, but not claimed in the earlier application. It might be to a slightly different invention, but typically it's got to be based on - well, it has to be based on what was disclosed in the first one because this specification can't have any more in it than did the earlier specifications. (Stoner dep., p. 46).

Thus, we focus our attention, as have the parties, on the original patent, namely Patent No. 4,595,314 that issued on June 17, 1986. During prosecution of its patent application, respondent pointed to its "highly desirable configuration for efficiently utilizing the lateral passive

⁷ In any event, even third-party patents may be relied upon as evidence; a patent is potentially relevant if it covers the feature at issue, regardless of the owner. See, e.g., *In re Virshup*, 42 USPQ2d at 1405; and *American Flange & Mfg. Co. v. Rieke Corp.*, 80 USPQ2d 1397, 1404 (TTAB 2006) ("Any expired patent is potentially relevant if it covers the feature at issue, regardless of the owner.").

forces acting against the outer surfaces of the side walls by the ground or soil to resist active forces on the arcuate top wall by the weight of the soil and other loads, such as vertical loads on the pavement." (Response, Nov. 5, 1981, p. 29).

Patent No. 4,595,314 expired, as did the others, on December 28, 2003. Patent Registration No. 4,595,314 contains the following relevant statements:

Background of the Invention

This invention relates to the production of precast concrete culvert sections which are usually installed in end-to-end alignment in the ground for directing a stream under a roadway and in place of using a bridge for spanning the stream. In the construction of such precast concrete culvert sections, it is desirable for the sections to have a configuration which effectively and efficiently utilizes the lateral forces acting on the side walls of the culvert section by the surrounding earth or soil to provide the culvert section with high strength for supporting substantial loads on the top wall of the section. It is also desirable for the culvert section to have a minimum wall thickness, provide for a smooth flow of water into and through the culvert section and permit the maximum flow of water with a minimum overall height or rise of the culvert section. In addition, it is desirable for the culvert section to be constructed so that culvert sections with different spans and different heights or rises may be economically produced in order to accommodate water streams of various sizes.

Different forms of concrete culvert sections have been either proposed or made...However, the culvert sections which have been previously proposed or constructed fail to provide all of the above desirable features, as apparent after studying and analyzing the culvert sections.

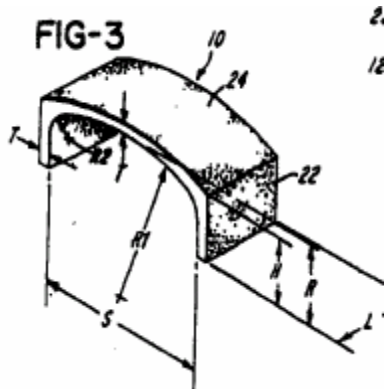
The background makes it clear that the loading efficiency of respondent's arch-box culvert is due to the relationship among the claimed trademark features. The parallel side walls interact with the arcuate top wall, the interior curved haunches, and the exterior sharp corners to produce efficient loading by reacting with the soil that is back-filled against the side walls. Also, as spelled out above, the sidewalls are able to be thinner than other shapes because of the structural efficiency of respondent's product design. The thinner side walls reduce the weight and cost of a culvert, and allow more water to pass through a bigger opening in the culvert. The efficiencies of the design are further spelled out in the patent as follows:

Summary of the Invention

The present invention is directed to an improved precast concrete culvert section which provides all of the desirable features mentioned above, including an efficient structure which effectively utilizes the forces exerted by the surrounding soil to provide high strength for supporting substantial vertical loads. The culvert section of the invention may also be efficiently produced in different spans and rises with a simple and economically constructed forming system and provides

for attaching vertical concrete wing walls to produce a hydraulically smooth flow through the culvert sections. The above mentioned features and advantages of the invention and other features and advantages will be apparent from the following description, the accompanying drawing and the appended claims.

Figure 3, shown below, is a "perspective view" of respondent's culvert.



In the "Description of the Preferred Embodiments," the following is stated with regard to Figure 3:

[E]ach of the culvert sections 10 includes parallel spaced vertical side walls 22 which are integrally connected by an arcuate top wall 24. The inner surface of the top wall 24 has a radius of curvature R_1 which is between twenty feet and thirty feet and preferably about twenty-five feet. The thickness T of the side walls and the top wall is preferably within a range of eight inches to fourteen inches depending on the span S defined between the parallel inner surfaces of the side walls. A thickness T of ten inches is suitable for spans S between fourteen feet and twenty-five feet. The outer surfaces of the side walls 22 have a height H which is at least sixty percent of the rise R defined between the bottom surfaces of the side walls and the top inner surface of the top

wall 24. The vertical height H of the side walls 22 is also less than fifty percent of the radius of curvature R1 which is at least twice the rise R. In the optimum construction of each culvert section 10, the height H of the side walls 22 is between eighty and ninety percent of the rise R, and the outer surface of each side wall 22 joins with the top surface of the top wall 24 to form a relatively sharp corner with an angle A of between 105 degrees and 120 degrees and preferably about 112 degrees. The length L of each culvert section 10 may range between four feet and ten feet, depending upon the span S. The inner surfaces of the side walls 22 and the top wall 24 are joined together by a curved surface having a radius R2 of about three feet. This provides the corner portions with a substantially greater thickness.

It has been found that the construction and assembly of the culvert sections as described above in accordance with the invention provides desirable advantages. Specifically, the above described values and relationships between the radius R1, the wall height H and the rise R provide the optimum configuration for utilizing the lateral or horizontal forces acting against the side walls 22 to support the earth or ground G and other loads on the top wall 24...The forces of the earth acting horizontally against the upper corners of the side walls 22 are also effective in helping to counteract the outward forces on the side walls 22 by the downward or loads on the arcuate top wall 24.

As indicated earlier, Section 23(c) of the Trademark Act provides that a mark that, as a whole, is functional may not be registered on the Supplemental Register. When asked "to identify each feature of the culvert that does not

contribute to the operation of the culvert," Mr. Beach responded: "I mean, everything contributes to the operation because it supports a load. It's a structure that supports a load." (Beach disc. dep., pp. 86-87). Mr. Beach testified that "Yes, [Patent No. 4,595,314] covered some of CON/SPAN's arch-box shape, yes," and "[M]ost of [respondent's shapes] are covered by at least part of the patent." (Beach test. dep., pp. 108, and 132-33.) Respondent has failed to convince us that any element of its described trademark is ornamental, incidental or arbitrary; rather the mark in its entirety is functional.

The parallel spaced vertical side-walls interact with back-filled earth placed along the outside of the culvert. Mr. Beach points to respondent's "distinctive arch action" and stated that respondent's "innovative, economical design stands apart from any other system." (Beach test. dep., p. 77). He also highlighted the "tremendous reserve strength of the system." (Beach disc. dep., p. 90). Respondent's "distinctive arch action" refers to how soil lends support to the sidewalls that in turn interact with the arcuate top wall. The sharp corners act as extensions of the side walls, creating additional surface for the soil to press against, and lend support to the arcuate top to counterbalance the horizontal truss forces produced in the arcuate top when it is loaded. The sharp outside corners

also add stiffness to the structure. Further, the concurrent curved interior haunch of the arch moves the bending movements of the structure, thereby reducing the amount of the arch span that is under load, and so it reduces the need for reinforcement of the top wall. (Harton dep., pp. 11-14).

When the patent claims are compared to the trademark registration, it is readily apparent how important the elements of the trademark, as described in the trademark registration, are to the patentability of the invention. That is, each of the elements comprising the trademark is an essential element of the patent. Claim 4 of the patent registration reads as follows:

In a precast concrete culvert section including a pair of parallel spaced vertical concrete side walls having bottom surfaces adapted to rest on corresponding concrete footers, an arcuate concrete top wall integrally connecting said side walls, and said side walls having opposing inner surfaces defining a span greater than the length of said side and top walls, the improvement wherein said arcuate top wall has a generally uniform thickness with a curved inner surface having a radius of curvature at least twice the rise defined between the top center of said curved inner surface and said bottom surfaces of said side walls, each of said side walls having a generally uniform thickness and a flat vertical outer surface with a vertical height at least sixty percent of said rise and less than fifty percent of said radius of curvature, said concrete top wall has a curved outer surface forming a

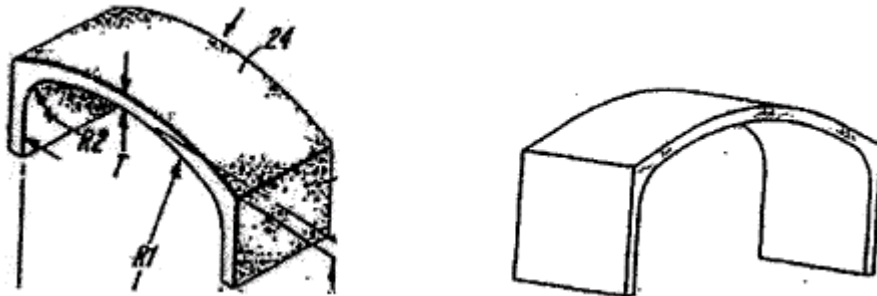
relatively sharp corner with said outer surface of each said side wall, reinforcing members embedded in said concrete and extending generally parallel to said outer surfaces of said top and side walls, and said inner surface of said top wall are connected by a curved surface cooperating with said relatively sharp corner to define a corner thickness substantially greater than the uniform thickness of said side and top walls.

The description of the registered trademark comprises five distinct features. These features correspond to the patented features set forth in Claim 4 of the patent, as indicated in the table below.

Trademark Reg. No. 2670588	Patent Reg. No. 4595314
"a one-piece open bottom bridge unit"	"a precast culvert section"
"with parallel spaced vertical side walls"	"including a pair of parallel spaced vertical concrete side walls"
"connected by an arched top wall"	"an arcuate concrete top wall integrally connecting said side walls"
"and having sharp outside corners"	"said concrete top wall has a curved outer surface forming a relatively sharp corner with said outer surface of each side wall"
"and a width substantially greater than its length"	"said side walls having opposing inner surfaces defining a span greater than the length of said side and top walls"

Simply put, the language of the patent claim defines the features of the registered trademark as described by respondent.

The side-by-side illustration shown below is also instructive. On the left is Figure 3 in the patent, "a perspective view of a culvert section." As noted earlier, it is one of the "preferred embodiments" listed in the patent. On the right is a drawing of the registered trademark. It is obvious that the patent and trademark drawings are remarkably similar:



See In re Lincoln Diagnostics Inc., 30 USPQ2d 1817, 1823 (TTAB 1994) (applicant's design is not identical to the design of the preferred embodiment depicted in the patent, but the two are substantially similar in appearance and function).

Mr. Harton testified about his structural evaluation of respondent's culvert (identified as "CSC"). (Harton dep., ex. no. 1). Mr. Harton's report listed his findings, including the following:

The "haunch" and exterior sharp corners, when combined, significantly improve the structural performance of the CSC over alternative precast shapes.

As the CSC section deflects under load, the passive soil pressure on the vertical sidewalls develops a thrust force. This thrust helps resist the vertical loads and substantially reduces the flexural and shear stresses in the arched roof slab. A box culvert is not capable of developing this thrust action.

The exterior sharp corners of the CSC extend the vertical sidewalls to the tops of the roof slab providing the most efficient contact area for the backfill. This helps optimize the thrust action.

Mr. Harton goes on to make additional comparisons to show the advantages of the shape of respondent's culvert over other designs. He points out that the sharp corners of the arch-box shape allow an extension of the side-wall height, thereby increasing the amount of surface area against which the soil can react, and lending support to the arcuate top to counterbalance the horizontal stress forces produced in the top when it is loaded. (Harton dep., pp. 11-14). Even Mr. Beach indicated that "sharp corners would add more mass and probably be stiffer." (Beach test. dep., p. 120).

Further, the curved interior haunch of the thickened corner has utility. The curved interior shape of the thickened corner of the arch-box adds stiffness, thereby maximizing the cross section of the culvert and minimizing the unsupported span of the top arch. (Trimbath dep., p.

186). Respondent contends that "the thickened corner - the distinctive and arbitrary component of [respondent's] Registered Trademark Shape - adds stiffness not because of the corner's interior or exterior shape, but merely through [sic] the use of the additional concrete, regardless of its shape." (Brief, p. 32). We simply find nothing "distinctive" or "arbitrary" about the thickened corner.

Messrs. Harton and Trimbath conclude that the patented and trademarked features of respondent's culvert have a functional advantage over precast culverts of other shapes. We agree, and that is why the design received patent protection.

We have considered respondent's design patents as well. The patents show some designs that are very similar to the registered trademark. Respondent urges that this evidence shows that some concrete bridge culvert designs incorporating arches may be ornamental. This evidence, however, is insufficient to counter the significant probative value accorded to the utility patents as discussed above. *In re Caterpillar, Inc.*, 43 USPQ2d 1335, 1339 (TTAB 1997) ("The fact that a configuration design is the subject of a design patent, as in this case, does not, without more, establish that the design is non-utilitarian and serves as a trademark."). See *In re American National Can Co.*, 41 USPQ2d 1841 (TTAB 1997).

In sum, we find that respondent's utility patents, which as discussed above disclose and claim the utilitarian advantages of the features of respondent's registered trademark, show that the particular product design clearly "affects the...quality" of respondent's bridge units. Given the heavy weight to be accorded such patent evidence under *TrafFix*, we find that the patents are sufficient to establish, *prima facie*, that the registered design as a whole is functional.

Touting of the Utilitarian Advantages of the Design

If a seller advertises the utilitarian advantages of a particular feature of its product, this constitutes strong evidence of functionality. The record shows that on numerous occasions in print media, respondent and its employees (as well as others) tout the advantages of respondent's bridge unit design. The clear import of this evidence is that the product design or shape of the bridge unit is what produces a better and stronger bridge or culvert.

Through the years respondent has distributed product brochures regarding its precast concrete bridge units. (e.g., CT 000391). In the brochure, respondent identifies itself as "The Technology Leader...Shaping The Future." The brochure points to respondent's "patented modular precast system" and that its "fully engineered system stands apart

from other products through the strength of its distinctive arch action and extensive technical support." The brochure also points out how respondent's product saves the purchaser "time and money" (CT 000393); the first factor listed refers specifically to the shape of the product: "The arch shape provides an economy of materials for a lower initial cost." In the brochure, respondent highlights "The Arch Advantage" with several bullet points (CT 000397), including:

- Structural efficiency - carries heavy loads at low stress levels

- Curved top surface sheds water and salts to increase life cycle length

- Eliminates longitudinal pavement cracks over joints

- Eliminates bumps in approach pavement to bridges

- Clear spans from 12 ft to 48 ft

- Rises from 5 ft to 13 ft

The other advantages referenced by respondent in the brochure, we recognize, depend mainly on the precast construction of the bridge.

Another brochure touted that respondent's bridge units are "Engineered for Efficiency and Economy." (Contech trial ex. no. H-31, p. CT 001789). Respondent pointed out the "Advantages of Arch-box shape" as follows:

- Develops efficient arch action while maintaining vertical sidewalls

Provides large waterway openings with minimum headroom and compact shape

Vertical sidewalls allow simple wingwall connection and hydraulically efficient entrance condition

Aesthetic appearance

These same benefits were highlighted by Mr. Beach in a paper he authored that is captioned "Alternatives to Small Bridge Replacements" presented to the annual County Engineers Workshop in Ann Arbor, Michigan. (Beach ex. no. H-39, p. CT 000608).

On several occasions, respondent's advertising refers to its "patented" design, clearly implying that, as was the case, respondent's arch-box design was an improvement on existing technology. "The unique load-carrying capacity and structural performance of [respondent's] patented arch-box shape is particularly significant in the new 28, 32 and 36 ft. series." (CT 005360).

On other occasions, the economy of materials is touted as a result of thinner walls, reducing the amount of material required to build the units. (CT 005300 and CT 000393). Another advantage touted by respondent is the hydrological efficiency of the arch-box shape. When spanning a stream or river, the thin, parallel-spaced side walls allow for a greater flow volume. "The unique combination of vertical sidewalls and the arched top wall not only enhance the hydraulic and aesthetic values of the

culvert, but also greatly increase its load carrying capacity." (CT 000614).

In addition to respondent's touting the functional features of its arch-box shape in its advertisements, the record includes materials respondent has given out to customers that tout these features, and articles authored by its employees that tout the functional features of the specific configuration of respondent's bridge units.

A page in respondent's "Design Manual" (CT 004419) discusses the "Significance of October 27, 1992 Load Test":

The load test results dramatically demonstrate two attributes of CON/SPAN Bridge Systems that are important for a long-life, maintenance-free bridge installation.

Resistance from the soil mass keeps stress intensities low at operating levels. This is significant for most bridges where load repetitions are high and environments are harsh.

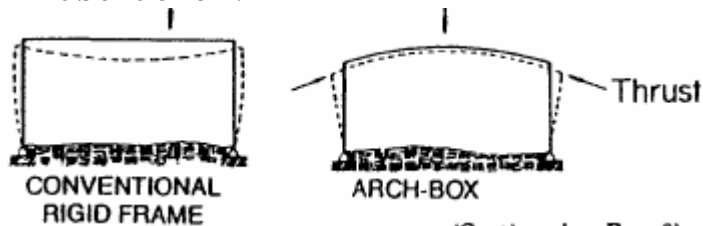
A tremendous capacity is available for extreme loads.

The Dayton test documented the response of a less flexible reinforced concrete structure that has the independent strength to resist much of the applied load. The arch-box shape utilizes the large carrying capacity of an arch top that is mobilized by the reaction of flat vertical side walls into the surrounding soil mass.

Mr. Beach authored an article about respondent's bridge systems that appeared in Dayton Engineer (December 1989) (Kistner ex. no. 3, CT004410-15). Mr. Beach introduced respondent's bridge unit design by pointing out that

"[b]ecause of their great widths compared to their heights and because of the inherent durability characteristics of concrete, these culverts provide an economical design solution for short span bridge replacements." He explained the "Theory" as follows (CT 004410-11):

The unique combination of vertical sidewalls and the arched top wall not only enhances the hydraulic and aesthetic values of the culvert but also greatly increases its load-carrying capacity. This increase in load-carrying capacity is perhaps most effectively shown by the following illustration.



With the arch-box structure, as the culvert begins to deflect, a thrust is developed by the passive pressure of the earth backfill counteracting the efforts of the applied loads to deflect the top of the structure. In a state of extreme overload the arch-box cannot collapse without pushing the block of soil behind the sidewalls far enough to allow the arch to collapse. Hinges will form in the culvert but the units will still be a viable structure with the pressure from the backfill providing the necessary support.

Another significant contribution to the structural advantages of the arch-box shape is its resistance to shear. Due to the thrust and the arch shape, shear from the vertical loading is greatly reduced in a section. This allows the unit to maintain its standard 10" thickness under much deeper fills than

normally considered for such a lightweight section.

Summarizing, the behavior of the culvert is dependent to a limited degree on its interaction with the surrounding backfill. The backfill restrains the tendency of the sides of the culvert to flex outward. This restraint develops a thrust in the curved top wall of the unit that creates arch action to increase its capacity to carry vertical loads.

In giving information to prospective customers, respondent "certainly touted the benefits of the system." (Beach disc. dep., p. 26).

Mr. Beach authored a paper captioned "Load Test Report and Evaluation of a Precast Concrete Arch Culvert" for presentation at an annual meeting of the Transportation Research Board in January 1988. (CT 004606-36). Mr. Beach's comments about respondent's bridge units included the following:

Because of their great widths compared to their heights and because of the inherent durability characteristics of concrete, these culverts provide an economical design solution for short span bridge replacements.

Similarly, an article authored by the director of research and development for respondent, in Structural Engineer (November 2004) (CT 000073-76) and captioned "A Bridge Ahead of Its Time," states the following in regard to respondent's bridge unit:

In general, the arch can carry heavy loads at relatively low stress levels because it is a buried structure that behaves as an interactive soil-structure system...the concrete arch can be thinner than a flat slab or beam with the same span.

Further, other articles written by third parties about respondent's bridge units often quote employees of respondent, or otherwise address the functionality of respondent's design. See TMEP §1202.02(a)(v)(B) (7th ed. 2010) ("The examining attorney may also check the websites of...industry and trade publications and computer databases to determine whether others...have written about the applicant's design and its functional features or characteristics.").

In an article in the Dayton Daily News (CT 005296), the writer described the replacement of an old bridge with respondent's bridge, and the testing conducted to determine its load capacity: "The system extends the benefits of buried concrete culverts to small-span bridges. The new technology makes such bridges easier and cheaper to install, less susceptible to damage from icing of the deck, and virtually maintenance-free, said CON/SPAN engineer Tim Beach."

Another article, captioned "Golden Arches," addresses how "CON/SPAN [respondent] uses the stability of the arch to

create bridge spans that were once thought impossible." (CT 000115-18).

CON/SPAN's arched shape allows much of the vertical load to be transferred laterally, where it can be carried by the side supports and the surrounding ground. A CON/SPAN bridge structure for a specific application can therefore be made thinner than a standard flat-topped structure for the same application. CON/SPAN becomes significantly lighter than box culverts when this thinner construction is factored in with three-sided construction, as compared to a four-sided box culvert.

The maximum span that can be obtained with a precast concrete box culvert is generally accepted as 24 feet. Even if such a larger span could be designed, the logistics of getting it to a jobsite would be problematic.

Many of these disadvantages can be eliminated with CON/SPAN structures that can carry loads over a longer span than a box culvert.

In "Project Case Study" appearing in CE News (December 2003) (CT 000103-04), one of respondent's bridge units was being used for a runway extension at Houston's Bush International Airport. The study stated:

A three-sided arch box was a sound choice for this project because such structures can carry extreme loads at relatively low stress levels because they are buried and behave as an interactive soil-structure system. The arched top facilitates this interaction: as vertical loads on the structure increase, the arch deflects downward and pushes the legs out into the surrounding soil.

The soil has a great capacity to "push back" and supports the legs to resist a portion of the load, thereby reducing the amount of load resisted internally by the precast structure.

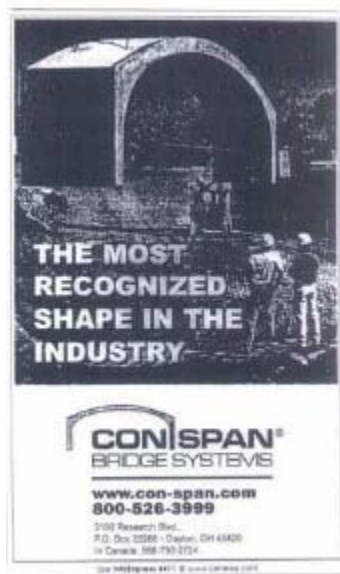
A paper captioned "Managing Civil Engineering Innovation: Interview" appeared in Journal of Management in Engineering (July 1990). (Harton ex. no. 1, attachment J). The interview is with William Lockwood, founder of respondent and original owner of the utility patents of record. The article gave background information about respondent and its products, stating that the arch-box shape unit "extends the economy of culverts to greater clear spans," and that the product "develops efficient arch action while maintaining vertical side walls," providing "large waterway openings with minimum headroom and compact shape." According to the author, respondent's product "has proven repeatedly to be more economical than alternative designs." Mr. Lockwood stated the following:

The CON/SPAN shape develops an efficient arch action in the top of the unit by reacting on the adjustment soil mass along both sides. The structural action creates large load-carrying capabilities with very reduced sections.

The system is, first of all, proving to be more economical than alternative designs, on basis of just first cost.

We are not persuaded by respondent's contention that it has engaged in "look for" advertising to highlight its registered trademark, as opposed to the functional features

of the bridge units. In point of fact, Mr. Beach could not recall if any of respondent's promotional materials points to the shape as a trademark; he further indicated that he was not aware of any marketing materials of respondent that even depicted the registered configuration. (Beach disc. dep., p. 74). The closest example of record appears to be the advertisement shown below. (Contech ex. no. H-36).



However, neither the use of the two-dimensional depiction in the CON/SPAN logo mark nor the actual picture of the bridge unit is compelling. See *Stuart Spector Designs v. Fender Musical Instruments*, 94 USPQ2d 1549, 1572 (TTAB 2009) ("Look for' advertising refers to advertising that directs the potential consumer in no uncertain terms to look for a certain feature to know that it is from that source. It does not refer to advertising that simply includes a picture

of the product or touts a feature in a non source-identifying manner.").

The materials cited above, as well as several others of record, repeatedly describe the functional advantages of respondent's arch-box shape over other designs. The advantages highlighted by respondent are specific to its arch-box bridge unit in that the touted features of the shape work together in creating a more efficient structure. See *In re Edward Ski Products Inc.*, 49 USPQ2d 2001, 2004 (TTAB 1999) (advertising in terms of the product's being "scientifically designed" and the result of "high tech engineering" deemed to tout the product's utilitarian advantages).

We find that this factor clearly weighs in favor of a finding of functionality.

Alternative Designs

Where, as here, a feature of the device is found to "affect[]...the quality of the device," the Supreme Court stated that "there is no need to proceed further to consider if there is a competitive necessity for the feature." See *TrafFix*, 58 USPQ2d at 1006, which distinguishes the test as applied to cases involving aesthetic functionality from the test in cases involving functionality "under the *Inwood* formulation," that is, "if it is essential to the use or purpose of the article or if it affects the cost or quality

of the article." See also *Valu Engineering Inc. v. Rexnord Corp.*, 61 USPQ2d at 1429 (because these "other considerations," that is, the disclosures and claims of the patent, establish the functionality of the design, "there is no need to consider the availability of alternative designs, because the feature cannot be given trade dress protection merely because there are alternative designs available.").

In view of the heavy probative weight given to the utility patents demonstrating the functionality of respondent's registered mark, we are convinced that there is no need to consider the existence of alternative designs. *Id.* That said, however, even in considering this factor in our determination, ultimately we would not rule in respondent's favor.

The fact that there may be alternative designs is hardly surprising, or in and of itself, legally sufficient. The availability of alternative designs does not convert a functional design into a non-functional design. *Traffix*, 58 USPQ2d at 1007. The question is not whether there are alternative designs that perform the same basic function but whether these designs work "equally well." *Valu Engineering*, 61 USPQ2d at 1427, quoting, J. T. McCarthy, McCarthy on Trademarks and Unfair Competition, §7:75, 7-180-1 (4th ed. 2001). The record includes several culvert shapes, some actual ones and some hypothetical designs, that

purportedly are alternative designs. In fact, the parties have taken a significant amount of testimony, and introduced many exhibits, bearing on this factor.

Much of the testimony relating to this factor reads like a patent dispute, detailing geometric ratios and other numeric values. Based on the testimony of its expert Mr. Stoner, respondent argues at length that the registered mark is not functional because of the existence of alternative designs for culverts. However, neither respondent nor Mr. Stoner have adequately explained why the design features of respondent's arch-box culvert, as shown and described in the trademark registration, are not essential to the function or purpose of the arch-box design or why the design features do not affect the quality of the product. Mr. Stoner points to the recitation in the patent claims of specific geometric relationships, pointing out that the geometric numbers are not used in describing the trademark at issue. The omission of the geometry of respondent's bridge units in the description of the trademark in the registration is hardly a basis on which to find that the features comprising the registered trademark are not functional. "[T]he claims of a patent are not limited in scope to the best mode for practicing the invention or to any particular mode for practicing the invention that is described in the specification or drawings." *In re Dietrich*, 91 USPQ2d 1622,

1633 (TTAB 2009). Again, at issue here is a trademark, not a patent, and there is no reason to set forth specific geometric numbers in the trademark description - rather, that is the province of a patent claim. As earlier discussed, each of the items in the trademark description is included in the patent, albeit without specific geometric ratios and other numeric information.

To be candid, we are neither patent attorneys nor civil engineers. Each side has presented expert testimony, petitioner offering that of two civil engineers and respondent offering that of a patent attorney. Respondent also took the testimony of Michael Carfagno, respondent's vice president of engineering. Each side gives differing views of the designs offered by respondent as alternatives. Much of Mr. Stoner's testimony and expert report comprises patent terminology in very technical terms. We view expert testimony in Board cases, particularly those involving the issue of functionality, as designed to help the Board to understand the goods and the relevant technology in a way that a layman would comprehend. *Compare Nilssen v. Motorola, Inc.*, 80 F.Supp.2d 921, 924 at n.5 (N.D. Ill. 2000) ("This Court particularly appreciates the parties' efforts (as needed in all complex patent cases) to take technical and sometimes impenetrable jargon - what would otherwise be pure gibberish to a layman - and 'dumb it down'

by explaining that terminology in more comprehensible terms."); *vacated and remanded*, 255 F.3d 410, 59 USPQ2d 1310 (7th Cir. 2001). Assertions about geometric relationship, the doctrine of equivalents and the like were not helpful in our determination of the functionality of the registered trademark. Although we find all of the experts, namely Mr. Stoner as a patent attorney, and Messrs. Harton and Trimbath as civil engineers, to be credible, we find the testimony of petitioner's experts to be more relevant to the specific issue at hand, namely the trademark question of the functionality of the registered mark.

By way of example, a substantial portion of Mr. Stoner's testimony concentrates on respondent's shape versus several hypothetical shapes that were prepared for this litigation. Mr. Stoner speaks in terms of the doctrine of equivalents and prosecution history estoppel. Although Mr. Stoner's testimony may be relevant to the grant of a patent or a patent infringement case, it has little to do with the functionality of respondent's registered trademark - an issue that depends on the functional utility of the elements claimed to comprise the trademark. *See In re Dietrich*, 91 USPQ2d at 1633 ("[A]pplicant's argument that 'there may be innumerable spoke patterns which are distinct from the [applied-for] spoke pattern, which also fall within the scope of some of the claims of some of the patents, just as

there are infinite spoke patterns which are not covered by any claim in any of applicant's patents is not compelling."). In our view, the record establishes that each of these elements are essential to the function of respondent's bridge units, and, as shown by the claims of respondent's patent, are essential to the patentability of the bridge units. Thus, the fact that similar bridge units may be produced with different looking features does not detract from the functional character of registrant's particular bridge unit design. See *In re Morton-Norwich Products, Inc.*, citing *In re Honeywell, Inc.*, 532 F.2d 180, 189 USPQ 343 (CCPA 1976).

Even assuming *arguendo* that there are alternative designs, there would appear to be a relatively limited number of them which could be competitive with respondent's design. Respondent has offered many designs, including hypothetical designs (some of which, at least to our eyes, look virtually identical). Most of the designs, according to petitioner's experts, do not, or would not work as well as respondent's design in some applications, such as long span and low rise situations. In any event, that there are some alternative configurations which may work equally well (and the evidence differs on this point) does not alter the fact that applicant's configuration was designed functionally, as made evident from its patented utilitarian

features. *In re Vico Prods. Mfg. Co., Inc.*, 229 USPQ at 368. Further, "[i]f the feature asserted to give a product distinctiveness is the best, or at least one, of a few superior designs for its de facto purpose, it follows that competition is hindered. *Morton-Norwich* does not rest on total elimination of competition in the goods." *In re Bose Corp.*, 227 USPQ at 5-6.

Mr. Trimbath stated that other arch-box culverts have lesser benefits or are less efficient than respondent's culvert, based on his experience, analysis and observation. (Trimbath dep., p. 17). "The sharp outside corners force the side walls to move horizontally more than if you had a chamfer or round corner under a unit deflection, and the more lateral movement those walls have, the faster they develop those earth-thrust pressures, which is a benefit of [respondent's] unit...[Respondent is] using those pressures of the earth to help reduce the shear stresses in the top of the unit." (Trimbath dep., p. 66). A design with chamfers on the outside corners "weakens the section, softens it up and, as I said, the interaction with the adjacent soil is not as efficient as with the sharp outside corners." (Trimbath dep., p. 68). Respondent's design also allows for greater flow or waterway area than several of the hypothetical alternative shapes; "the larger the area under the culvert or the waterway area is, then the larger

potential flow volume you would have." (Trimbath dep., p. 73). Mr. Trimbath further opined that the advantages of respondent's arch-box are "more pronounced" in the longer spans, relative to box shape culverts. (Trimbath dep., p. 187).

Mr. Kistner testified

[petitioner] would very much like to manufacture this product, this shape because it would give me efficiencies in the marketplace, significant efficiencies over the products that I'm currently able to produce...

[Respondent's product] gives you that vertical rise which gives you a wider waterway and a better waterway opening while still giving you the strength of the arch which the arch allows you to span those greater spans...The arch shape is fundamentally a stronger element. It's the old squeeze the egg theory, you can't crush it. The arch has the same type of action. You press on the top and it resists because it's an arch as opposed to a flat structure which will deflect which is what we have with the three-sided rigid frame or the box culvert...Although a flat top can be manufactured to resist, it would be "totally uncompetitive" because it would need to be "so thick," thereby driving costs so high. (Kistner dep, pp. 31-33).

The question is not whether there are alternative designs that perform the same basic function but whether the available designs work "equally well." *Valu Engineering*, 61 USPQ2d at 1427. Mr. Kistner contends that the other shapes proposed as alternatives by respondent are not competitive. (Kistner dep., p. 132). Although he did not conduct any

engineering studies on these purported alternative designs, he indicated that it "would be silly to do an engineering study on an obvious situation...something that you know is intuitively inefficient." (Kistner dep., pp. 132-134).

As pointed out by petitioner, it is telling that the alleged alternative designs proposed by respondent have relatively short spans. There is nothing to indicate that any of these designs, unlike respondent's arch-box design, could be extended to cover longer spans.

We also are not persuaded by respondent's assertion that it has lost contracting bids to competitors, including petitioner, for certain bridge projects. (Carfagno dep., p. 24). As pointed out by petitioner, it can effectively compete with respondent at some shorter span lengths; at longer span lengths, however, respondent's arch-box design is clearly advantageous. Further, as indicated by Messrs. Kistner (dep., pp. 135-38) and Trimbath (dep., pp. 95-96), other factors are often involved in a successful bid (e.g., cutting the profit for a particular design) that have nothing to do with the utilitarian features of a bridge unit.

Finally, although there may be other bridge unit designs, those designs may be functional as well. If as respondent contends, the advantages of its arch-box design are present in any arch-box shape, then perhaps most, if not

all arch designs would be found to be functional and, thus, not registrable as trademarks.

To summarize, in view of respondent's utility patents, the existence of alternative designs need not be considered. However, even when the alternatives are considered, this factor weighs in favor of petitioner.

Ease or economy of manufacture

This factor involves a consideration of whether respondent's design results from a comparatively simple or cheap method of manufacture. "While evidence that a product feature makes the product cheaper to manufacture may be probative in showing functionality, evidence that it does not affect its cost is not necessarily proof of non-functionality." *In re N.V. Organon*, 79 USPQ2d 1639, 1646 (TTAB 2006).

Mr. Beach testified that an arch-box design most always uses less concrete because it "is more structurally efficient" in "[h]ow it carries the load." (Beach disc. dep., p. 69). He added that "[t]he arch shape provides an economy of materials for a lower initial cost." (Beach disc. dep., p. 88). As noted earlier, Mr. Lockwood stated that respondent's bridge unit "has proven repeatedly to be more economical than alternative designs."

We recognize that part of the less expensive cost of respondent's bridge units is due to using precast concrete.

However, another factor to consider is that, as acknowledged by Mr. Beach, the structural efficiencies of respondent's arch-box shape allow the bridge unit to have thinner walls, thereby reducing the amount of concrete required. In addition, the structural efficiencies allow for less use of reinforcements in the arch-box structures of respondent. Due to the necessary reinforcement of other designs, along with increased shipping expenses due to added weight as a result of structural inefficiencies, the costs for the alternative designs may be higher.

Based on the evidence of record, we find that respondent's design, due to its structural efficiencies, is less expensive to produce than other less efficient designs that may require more concrete and/or reinforcing materials. This factor weighs in favor of petitioner.

Even if respondent's design were no less expensive to manufacture than other bridge units, while a lower manufacturing cost may be indicative of the functionality of a product's features, an equal or higher cost does not detract from the functionality of those features. As stated in *TraFFix*, 58 USPQ2d at 1006, a product feature is functional "when it affects the cost or quality of the article. (emphasis added). Thus, even if this factor did not also support the functionality of the design, it does not affect the outcome of this proceeding. Even at a higher

manufacturing cost, respondent would have a competitive advantage for what is essentially, as claimed in the utility patents, a superior bridge unit. *See In re Dietrich*, 91 USPQ2d at 1637. The functional advantages of respondent's product nonetheless afford applicant a competitive advantage. *Cf. In re American National Can Co.*, 41 USPQ2d at 1844-45.

CONCLUSION

Respondent's configuration imparts at least four improvements over other bridge units: the load-bearing performance of the arch-box top is enhanced by the soil interaction against the side-walls; the walls can be thinner because of the superior shear resistance qualities of the shape; the thick and sharp exterior corners enhance the structural efficiencies of the shape; and the shape is hydraulically efficient. As a result, the overall configuration is functional.

The fact that respondent's trademark, as described in the involved registration, lacks specific geometric ratios and numbers does not somehow magically transform the combination of functional features, as shown by the utility patent, into an indicator of source. While the patent claims specific geometric ratios, this fact does not establish the non-functionality of the trademark that lacks the same specificity, because the patent shows that the

features claimed as respondent's trademark are essential or integral parts of the invention and have utilitarian advantages. *In re Howard Leight Industries, LLC*, 80 USPQ2d at 1515 ("[W]e find that applicant's expired utility patent, which specifically discloses and claims the utilitarian advantages of applicant's earplug configuration and which clearly shows the shape at issue 'affects the...quality of the device,' is a sufficient basis in itself for finding that the configuration is functional, given the strong weight to be accorded such patent evidence under *TrafFix*."). Simply put, respondent's trademark comprises functional features as set forth in the patent, minus the mathematical ratios (except to the extent that one might view "a width substantially greater than its length" as a substitution for the ratios in a very general sense).

When considering the four factors bearing on functionality, we find that the factors weigh decidedly in favor of a finding that the registered trademark is functional. In making this determination, we have given heavy weight to the utility patents showing the functionality of each of the features claimed to be respondent's trademark. Moreover, we have given little to no weight to respondent's evidence and speculation about other design alternatives. *TrafFix*, 58 USPQ2d at 1007.

The record in this case is voluminous, and the arguments are numerous. We have carefully considered all of the evidence properly made of record pertaining to the issue of functionality, as well as all of the parties' arguments related thereto, including any evidence and arguments not specifically discussed in this opinion. We conclude, based on the preponderance of the evidence, that respondent's registered configuration is functional.

Decision: The petition for cancellation is granted. Registration No. 2670588 will be cancelled in due course.